FOR RICHER FIELDS

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INDUSTRY WEEK

Northern Chemical Industries Completes Plans for $9 Million Anhydrous Project

BALTIMORE — James E. Totman, president of Northern Chemical Industries, Inc., of Searsport, Maine and Baltimore has announced that, as of Jan. 6, plans covering N.C.I.'s entry into the anhydrous ammonia industry have been completed.

Preliminaries have been underway since about a year ago when the company was granted a certificate of necessity in the amount of approximately $9 million.

The Girdler Co., a division of the National Cylinder Gas Co., has been awarded the prime contract to erect a 125 ton per day anhydrous ammonia plant, a 60 ton per day nitric acid plant, a complete nitrogen solutions plant along with a 7500 KW power plant at Searsport.

Mr. Totman stated that, of the approximately 43,000 tons of ammonia produced per year, about 18,000 tons will be used in the production of some 32,000 tons of nitrogen solutions for mixed fertilizers. The balance of the ammonia will be sold to the sulfite pulp producers and other industrial users.

This new $9 million addition to New England's chemical industry was handled by White, Weld & Co., investment bankers with principal of-

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U.S. Industrial Chemicals to Dedicate $7 Million Tuscola, Ill. Plant Jan. 21

TUSCOLA, ILL.—A new $7 million plant for the production of synthetic ammonia and fertilizer nitrogen compounds will be formally dedicated here Jan. 21 by U.S. Industrial Chemicals Co., a division of National Distillers Products Corp.

Representatives of government, industry and agriculture will be on hand to witness the release of the first tank car of anhydrous ammonia to Central Illinois Fertilizer Co., Tuscola.

Production capacity of the new plant will be 50,000 tons per year of anhydrous ammonia.

Representing U.S. Industrial Chemicals Co. and National Distillers Products Corp. at the ceremonies will be John E. Bierwirth, president; Dr. Robert E. Hulse, vice president and director of the chemical divisions; Roy Coppedge, vice president; Lee A. Keane, vice president, U.S. Industrial Chemicals Co.; Warren Johnson, manager of chemical sales, and Lawrence C. Byck, Jr., assistant to manager, chemical sales.

Others scheduled to appear include Fred Jones, Tuscola mayor; Dr. K. D. Jacob, U.S. Department of Agriculture; and C. R. Ware, president, S. L. Victor, secretary and treasurer, and Percy C. Stackhouse, vice president and general manager, all from Central Illinois Fertilizer Co.

Firm Reports New High Analysis Process

DENVER—Colorado Fuel and Iron Corp. has announced the commercial availability of its high analysis diammonium phosphate fertilizer, "DAP." The new product, a 21-53-0 analysis, has been made possible by a recent technological development at the company's coke oven plant at Pueblo, according to K. B. Stuart, general sales manager of the firm's chemical, coke and coal divisions.

For many years, the company has produced ammonium sulfate as a by-product of its coke production. Under the new process, however, ammonia is being removed from coke oven gases with electric furnace phosphoric acid instead of with sulfuric acid as was done previously. Under the new system, the end product is diammonium phosphate.

Contrary to usual practice, CF & I managed to bypass the pilot plant step in developing the process. Full-scale plant production was used in tests during 1954. Following the successful tests, the company began to make plans for permanent changes in facilities to permit large scale production of the product in time for the 1955 fertilizer season.

The new material is water-soluble and can be used in irrigation water or in conventional mechanical equipment for applying fertilizer in solution, particularly through sprinkler irrigation systems. In dry form,

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Grain Sanitation Drive May Broaden Pesticide Market

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON—Two factors that recently came into existence may make a broader market for pesticide materials, according to trade sources here.

First was the enactment of the Miller Bill which opened an avenue of approach for the pesticide industry to obtain standards of residual tolerance for the use of economic poisons on agricultural commodities.

The next was the announcement recently that the Food and Drug Administration had reinstated its campaign of enforcement against contaminated or weevil infested wheat moving in interstate commerce. Trade officials here call attention to the condition where the pesticide industry has been road-blocked in any promotion efforts to introduce and stimulate sales of pesticide materials at the farm level of grain storage.

Before the Miller Bill enactment this industry was unable to push products which would have been an effective check on farm infestation of grain. Now FDA faces the situation where it has invoked an enforcement campaign and the chemical industry has at its hand the law of the Miller Bill.

It now seems possible and probable that under the Miller Bill that FDA will have to accept some standard of residual tolerance for pesticides which can cope with insect infestation of bread grain, at least at the farm level.

Under the general heading of residual pesticides are such products as DDT and others which have fallen under the FDA ban in other agricultural commodity fields. Now it would seem probable that pesticide manufacturers could move to ask U.S. Department of Agriculture and FDA to approve residual tolerance levels for effective insecticides to protect the farmer against economic penalties which are imminent under the FDA enforcement program.

No formal estimate is available as

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INDUSTRY MEETINGS

In Wisconsin

Insect control conference speaker cites potential role of systemics.—Page 4.

In North Carolina

Antibiotics for plant disease control look promising, pesticide conference hears.—Page 6.

In Illinois

Understanding of soil differences important, fertilizer meeting told.—Page 7.

In Texas

Supplies of materials will be ample this growing season, Fertilizer meeting hears.—Page 19.

Virginia Issues Rulings on Mixtures

RICHMOND, VA.—The Division of Chemistry of the Virginia Department of Agriculture issued rulings Dec. 28 on registrations of fertilizer-pesticide mixtures for peanuts for the 1955 season.

Under the rulings, fertilizer-pesticide mixtures must be registered under both the Virginia Insecticide, Fungicide and Rodenticide Law and the state's fertilizer law.

Record Attendance Posted at Northeastern Weed Meeting

By WALTER C. SMITH
Croplife Editorial Staff

NEW YORK—Attendance at the Northeastern Weed Control Conference reached an all-time high when more than 510 registered for the ninth annual meeting held here Jan. 5-7. The previous record was set at the 1954 meeting with 492.

John D. Van Geluwe, G.L.F. Soil Building Service, Ithaca, N.Y., was elected 1955-56 president at the business meeting on Jan. 6. L. L. Danielson, Virginia Truck Experiment Station, Norfolk, was elected vice president. Reelected officers were R. J. Aldrich, U.S. Department of Agriculture Field Crops Research Branch and N.J. Agricultural Experiment Station, New Brunswick, secretary and D. A. Schallock, Rutgers University, New Brunswick, treasurer. All officers were elected unanimously.

Marvin M. Schreiber, Cornell University, Ithaca, N.Y., was awarded $100 and a certificate of merit for the best paper delivered at the conference. His paper was entitled "A Comparison of MCP and

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Treasury Drops Probe of Potash Imports from Spain

WASHINGTON — The U.S. Treasury Department has announced that investigations of imports of muriate of potash from Spain, begun last Nov. 24, will be dropped. The department said it has determined that Spain is not dumping muriate of potash on the U.S. market at less than fair value.

Two other cases involving imports of muriate of potash still are under consideration. The Tariff Commission has scheduled a hearing on imports from the Soviet Zone of Germany for Jan. 25 and a hearing on imports from the Federal Republic of Germany and from France on Feb. 8.

In both instances, the Tariff Commission, under the law, is acting on advice received from the Treasury Department.

True D. Morse, Fred Hinkel on NAC Program

WASHINGTON—True D. Morse, under-secretary of Agriculture and Fred Hinkel, Columbia, Mo., president of the Missouri Farmers Assn., Inc., are to appear on the program of the National Agricultural Chemicals Association's spring meeting in St. Louis, March 7-9. This announcement was made last week by Lea S. Hitchner, executive secretary of the association.

At a meeting of the association's program committee Jan. 25, final plans will be made for the remainder of the program, Mr. Hitchner said. Announcements regarding program details will be made after that date.

Two hotels, the Chase and the Park Plaza will be utilized by the conventioneers.

Aldrin, Dieldrin Permitted Lower Hazard Ratings

NEW YORK—The Pesticides Regulation Section of the U.S. Department of Agriculture now permits lower hazard classifications for products containing aldrin and dieldrin, F. W. Hatch, manager of the Agricultural Chemicals Division, Shell Chemical Corp., pointed out recently. The lower hazard classifications permit milder warning and precautionary statements on product labels.

Mr. Hatch said: "In the course of manufacturing and packaging these products over a five-year period, there have been instances of exceptionally high exposure to them, higher than is likely to occur from their normal use. No demonstrable harm has resulted. Precautions for use are now similar to those recommended for other chlorinated hydrocarbon insecticides, i.e., adequate care should be taken to avoid swallowing, breathing dust and sprays, and contaminating the skin.

"Products containing 10% through 59% aldrin or dieldrin, which includes most commercial formulations, are now placed in a lower hazard category, which requires the mild signal work 'Warning' on the label. Another relaxation is the substitution of the term 'Hazardous' in the warning statement for 'Poisonous.'

"Aldrin and dieldrin products below 10%, which include most dust and granular formulations, may now be labeled with even milder statements, i.e., 'Warning' may be replaced by the simple word, 'Caution'."

Mr. Hatch indicated that relaxation to lower classifications is in line with USDA label acceptance of dieldrin for the control of certain pests in the home.

George N. Hoffer Retires From Potash Position

LAFAYETTE, IND. — Dr. George N. Hoffer retired as manager of the Midwest office of the American Potash Institute, effective Jan. 1. He had been with the institute since its beginning in 1935, and previously had been with N.V. Potash Export My.

ASC Committee

WASHINGTON — Ezra Taft Benson, secretary of agriculture, has announced the appointment of George B. Reeves of Elkton as chairman, and Chester S. Bradley, Elkton, and Calvin D. Gumm, Jr., Showell, as members of the Maryland State Agricultural Stabilization and Conservation Committee.

Program Set For Pacific Agricultural Chemical Conference

PORTLAND, ORE.—Details of the program for the second annual Pacific Northwest Agricultural Chemical Industry Conference, to be held Jan. 19-21 here, have been announced.

The conference is sponsored by the Western Agricultural Chemicals Assn., and it includes open meetings with entomologists from the Pacific Northwest Vegetable Insect Conference and representatives of the Northwest Cooperative Spray Project.

Business sessions will be held at the Benson Hotel.

The program:

Jan. 19, morning — Open meeting with entomologists of the Pacific Northwest Vegetable Insect Conference.

Jan. 19, afternoon—"Virus Transmission," Dr. Clark Amen, Oregon State College, Corvallis; "Weed Problems," Dr. Virgil Freed, Oregon State College; "The Current Status of 2,4-D in Washington," Dr. G. W. Fisher, State College of Washington, Pullman; "Recent Developments in Pest Control in the British Columbia Fruit Industry," Dr. James Marshall, Dominion Entomological Laboratory, Summerland, B.C.

Jan. 20, morning — Panel—"Registration and Toxicity of Agricultural Chemicals," Dr. Ritcher, Dr. Terrier, Mr. Patterson, Mr. Every, Dr. Sullivan; "Pesticide Tolerances," D. W. Dean, U.S. Department of Agriculture, Field Representative, Pesticide Regulation Section, San Francisco; "Items of Special Interest," Dr. William M. Upholt, U.S. Public Health Service, Wenatchee, Wash.; open forum and business meeting.

Jan. 20, afternoon—"Legislation," Keith Sime, Chipman Chemical Co., Portland, Ore.; "Some of the Problems Involved in Recommending Insecticidal Dosages," Dr. J. H. Pepper, Montana State College, Bozeman; "Developments in Grasshopper and Mormon Cricket Control," F. T. Cowan, U.S. Department of Agriculture, Entomology Research Branch, Bozeman, Mont.; "Systemic Insecticides," Dr. Rosmarie von Rumker, Chemagro Corp., New York.

Jan. 21,morning—Open session with representatives of the Northwest Cooperative Spray Project.

Robert W. Wilkerson In New Post With Minerals & Chemicals

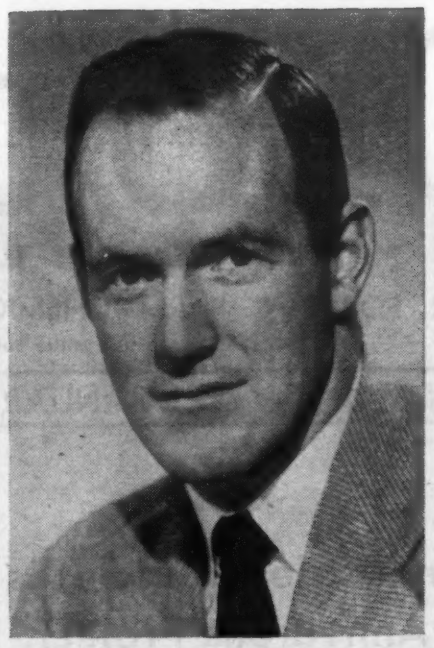
METUCHEN, N.J. — Minerals & Chemicals Corporation of America has announced the appointment of Robert W. Wilkerson to the newly created position of advertising and sales promotion manager with headquarters at the home office in Metuchen, N.J.

A. G. Blake, executive vice president, said that with the expansion of products and markets as the result of the merger of Edgar Brothers Co. and Attapulgus Minerals & Chemicals into Minerals & Chemicals Corporation of America, there arose a need for the coordination of the advertising and sales promotion activities of all the various divisions of the new corporation.

Mr. Wilkerson was formerly an account executive and secretary of Kenyon-Baker Co., Inc., advertising agency in Newark. Mr. Wilkerson assumed his new duties Jan. 3rd with Minerals & Chemicals.

LIBERTY H. BAILEY DIES

ITHACA, N.Y. — Dr. Liberty H. Bailey, former dean of the College of Agriculture at Cornell University and an internationally known botanist and horticulturist, died at his home here recently at the age of 96.



Henry J. Coleman

Hubert H. Tucker

Henry J. Coleman, Hubert H. Tucker Named by Sohio

CLEVELAND — Appointment, as of Jan. 1, of Henry J. Coleman as sales manager and Hubert H. Tucker as director of agricultural service in the newly organized Petrochemical Department of The Standard Oil Company (Ohio) has been announced by Edward F. Morrill, general manager of Sohio's new department at Lima, Ohio, where Sohio's $17,000,000 petrochemical plant is being built.

Mr. Coleman, following graduation from Dartmouth College and active service as a Lieutenant in the U.S. Navy, joined Sohio in Cleveland in 1946, where he served successively as staff assistant in marketing research, advertising manager, and chief of site development in the Marketing Department.

Mr. Tucker, who graduated from the University of Illinois and who holds a master's degree in dairy husbandry and agricultural chemistry from Pennsylvania State College, has had wide experience in agricultural research, coming to Sohio from the position of president of the Coke Oven Ammonia Research Bureau at Columbus, Ohio.

He holds membership in the American Society of Agronomy, American Dairy Science Association, American Association of Agricultural Engineers, American Society of Animal Production, American Society of Farm Managers and Rural Appraisers, American Chemical Society and American Association for the Advancement of Science.

It is expected that Sohio's new petrochemical plant will be in production in November 1955, according to Mr. Morrill. The products of this plant will include anhydrous ammonia, nitrate solutions and urea for agricultural use, and nitric acid for industrial use.

E. Gordon Crockett Joins Hollingshurst

NEW YORK—E. Gordon Crockett, formerly vice president of Chas. Page & Co., Inc., New York, and who was with the Page organization in London and New York for 26 years, has joined Hollingshurst & Co., Inc., 8-10 Bridge St., New York.

Mr. Crockett succeeds Arthur Berger who has been president of Hollingshurst & Co. since the death of Bernard O. Graves in 1943.

Hollingshurst deals in domestic and imported fertilizer and feed materials and chemical products, and is also active in the export of this range of products. The firm was originally established in London in 1873 and in New York in 1910. Mr. Berger continues to be chairman of the board.

Fertilizer Company Seeking Plant Site

BLACKWELL, OKLA.—Kelley DeBusk, manager of the Blackwell Chamber of Commerce, reports that there has been correspondence with Neosho Fertilizer, Inc., Chanute, Kansas, on the possibility of finding a plant site near Blackwell.

North Carolina Shipments

RALEIGH, N.C. — North Carolina fertilizer shipments during November totaled 47,294 tons, compared with 35,427 tons during November a year ago, according to a report from the North Carolina Department of Agriculture. Shipments during July-November in 1954 totaled 199,629 tons, compared with 196,402 tons during the corresponding period in 1953.

James S. Coale Retires as Chairman Of I. P. Thomas & Son

PHILADELPHIA—James S. Coale announced his retirement as board chairman of the I. P. Thomas & Son Co. at a recent dinner honoring him on the completion of a 56-year association with the company. Mr. Coale joined the Camden-Paulsboro Fertilizer Co. as vice president in 1898, succeeded the late Henry H. Lippincott as president in 1939, and was elected chairman of the board in 1949.

A long-time resident of Riverton, N.J., Mr. Coale was graduated from the Friends Central School and Swarthmore College. Prior to becoming a member of the Thomas Co. he was employed by Peter Wright & Son.

Mr. Coale served for a number of years on the board of the National Fertilizer Assn. He has also been identified throughout his life with civic and philanthropic activities. His present memberships include Union League, Riverton Country Club and Riverton Shade Tree Commission.

Since Mr. Coale's advancement to the chairmanship of the board, R. R. Hull has been serving as president in which capacity he worked closely with Mr Coale in recent months to complete negotiation with the Pennsylvania Salt Manufacturing Co. for integration of the I. P. Thomas & Son Co. as an operating division of the Pennsalt organization. As a component of Pennsalt Chemicals, production of the line of Thomas commercial fertilizers and superphosphates will continue at the Paulsboro plant which serves the eastern seaboard.

Increase Seen in Use of Anhydrous By AAI President

MEMPHIS—About 22% of the nation's agricultural nitrogen will be applied by farmers as anhydrous ammonia in the 1954-55 fertilizer year, according to a prediction by Mark C. Craft, Midwest Fertilizer Co., Springfield, Ill., president of the Agricultural Ammonia Institute, who was in Memphis recently with other members of the institute's executive committee. The institute is the trade association for ammonia interests in more than 40 states.

Ammonia as a commercial fertilizer will be used in many areas during the comming year, Mr. Craft said. He pointed to U.S. Department of Agriculture estimates which said this form of agricultural nitrogen had a 44% increase in use during the fertilizer year ended June 30, 1954. The institute estimates 475,000 tons of ammonia will be applied by farmers in 1954-55.

"Now that more synthetic nitrogen plants are on stream and the supply of ammonia appears to be sufficient to meet all demands, agricultural ammonia distributors throughout the nation feel confident they can supply all agricultural needs during the coming year," Mr. Craft said.

"USDA sources predict we will enjoy a further increase of 19% in agricultural ammonia consumption during the current fertilizer year, handling 395,000 tons of the nation's agricultural nitrogen.

"Many of our Institute leaders feel that figures on nitrogen consumption available to the USDA do not include all anhydrous ammonia applied by direct application.

"Instead of 395,000 tons, our leading Institute authorities believe the agricultural ammonia industry will handle approximately 475,000 tons of nitrogen this year, or roughly 22% of the total anticipated use of agricultural nitrogen in all types of fertilizers."

The AAI president said ammonia distributors throughout the nation are being encouraged to install more large pressurized tanks for storing the high analysis liquid nitrogen during off-season months.

Mr. Craft is a charter member of the AAI, and one of its first directors. He became Illinois' first agricultural ammonia distributor in 1950. He is president and treasurer of Midwest Fertilizer Co. at Springfield, and a partner with George J. Schmidt and Norman Mountz in the Great Northern Equipment Co. He also has interests in the hide and wool business, operates rendering plants, and deals in feeds and high protein supplements.

Harold Ferguson Joins Balfour, Guthrie

SAN FRANCISCO—Balfour, Guthrie & Co., Ltd., has announced the appointment of Harold Ferguson to the position of senior assistant to Dr. R. C. Neidig, vice president in charge of the firm's Fertilizer and Chemical Department.

Mr. Ferguson formerly was vice president of Naco Fertilizer Co.

CROP CONFERENCE

MORGANTOWN, W. VA. — The annual Crop Improvement Conference will be held on the campus of West Virginia University in Morgantown, Jan. 25-26, according to R. J. Friant, extension agronomist at the University. The 24th annual meeting of the West Virginia Associated Crop Growers will be held in conjunction with the conference. Theme for the conference will be "Winners—Men, Seeds and Soil."

Val E. Weyl Resigns As Editor of NAC Publication

WASHINGTON—Val E. Weyl, editor of the official publication of the National Agricultural Chemicals Assn., announced his resignation Jan. 10. Mr. Weyl, editor of the NAC News and Pesticide Review said he shortly would have completed four years of service with the association, performing duties pertaining to publicity.

As an entomologist, Mr. Weyl served with two divisions of the former Bureau of Entomology and Plant Quarantine, U.S. Department of Agriculture and with the Agricultural Chemicals Division of The Sherwin Williams Co., Cleveland. He said that his headquarters for the immediate future will be at 6611 Willston Place, Falls Church, Va.

International Names Sanford R. Bell as Bonnie Plant Engineer

CHICAGO — Sanford R. Bell has been promoted to the position of plant engineer at International Minerals & Chemical Corp.'s Bonnie chemcial plant, Howard F. Roderick, vice president in charge of the Phosphate Chemicals Division, announced Jan. 11.

Mr. Bell, who joined International's Phosphate Chemicals Division last April as project engineer, replaced Robert V. Safford, who was recently moved up to assistant manager in charge of engineering at the Bonnie plant. The Bonnie chemical plant is located near Bartow, Fla.

Before joining International, Mr. Bell was a process engineer with the Blaw Knox Engineering firm of Pittsburgh. He holds a degree in chemical engineering from Pittsburgh University.

Program Set For Illinois Spray School

URBANA, ILL. — Entomologists will report on research from the ground up at the Custom Spray Operators' School in the Illini Union at the University of Illinois Jan. 20-21.

J. H. Bigger will report on results of research in the use of soil insecticides, and L. L. English will discuss problems in spraying elm trees for insects. Both men are with the Illinois Natural History Survey.

In between will be reports on the general insect situation by H. B. Petty and on armyworms and chinch bugs by Norman Gannon, both of the survey.

Two spray operators will appear on the program. Irvin Borchers of Monmouth will give his experiences with soil insecticides, and R. O. Hall of St. Charles will tell how he has controlled flies in dairy barns.

Agronomists will report spraying of liquid fertilizers, brush control, new pre-emergence spraying methods, control of giant foxtail and quack grass, and control of weeds in soybeans and corn. Besides university agronomists, representatives of chemical companies will appear on the program.

Other insect reports will cover new insecticides, new fly control materials and methods, forage crop insects, legal responsibilities of sprayers, corn borer control and insect surveys.

Merger Reported

WICHITA — The merger of Frontier Chemical Co. of Wichita and Consumers Corp. of Chicago into the corporate shell of Follansbee Steel Corp. of Pittsburgh was reported here recently.

Du Pont Announces Education Aid Program

WILMINGTON, DEL.—A fund of $291,000 for grants to universities and colleges to help improve the teaching of science and mathematics was announced recently by the Du Pont Co. as part of its $800,000 aid-to-education program for 1955-56.

There are three separate parts to the support of teaching, which is the most recent development in the company's program:

In the newest phase, $75,000 for summer and winter fellowships for master's degree training for high school science and mathematics teachers; $125,000 to advance the teaching of chemistry in 50 privately supported institutions, mostly liberal arts colleges. $91,000 for 24 post-graduate teaching assistantships in chemistry.

S. A. Pond Named FMC Industrial Relations Head

NEW YORK—S. A. Pond has been appointed industrial relations manager for the Chemical Divisions, Food Machinery and Chemical Corp., New York, according to an announcement by Alfred T. Loeffler, vice president. Mr. Pond has been filling this position on an acting basis for the past year.

Prior to joining FMC in 1951, Mr. Pond was associated with Pan American World Airways, Inc., and the Marine Magnesium Products Corp., Division of Merck & Co. He is a graduate of Yale University and the Graduate School of Business at Stanford University.

Diamond to Install Radiation Laboratory

PAINESVILLE, OHIO — Plans to install a new radiation research laboratory in Diamond Alkali Co.'s Research Center at Painesville, Ohio, for investigating potential applications of atomic energy to a wide range of chemical processing operations, were announced recently by Dr. A. W. Meyer, director of exploratory research.

The new laboratory faciilty is scheduled for completion and operation by mid-February.

FIRM PURCHASED

WALLA WALLA, WASH. — Jack Huntington of Walla Walla and C. L. Cummings of Pendleton, Ore., have purchased Ted Millgard Farm Chemicals here.

Work Proceeding On Schedule at New Armour Plant

CHICAGO—Production is proceeding according to schedule on the Armour & Co. new phosphate rock plant at Bartow, Fla., and operations are scheduled to begin by this summer, according to the 1954 annual report of Armour, released recently.

The report states that Armour owns sufficient reserves of high grade rock in Florida to meet the growing needs of the division for many years to come.

Other activities of the Fertilizer Division which are listed in the report include the opening of the Memphis fertilizer plant last March and the start of shipment of plant food from the Waterloo, Iowa, plant last January.

OREGON SEED CROPS

CORVALLIS, ORE.—The value of Oregon's grass and legume seed production is about one seventh of the national total, according to a bulletin released by the Federal Cooperative Extension Service at Oregon State College. In 1952, the nation produced grass and legume seeds worth more than $200,000,000. The Oregon seed crop was valued at nearly $25,000,000. In 1953, the market dropped considerably, and the figures were approximately $112,000,000 and $16,000,000.

INSECT AND PLANT DISEASE NOTES

Wyoming Summarizes Pest Damage for '54

LARAMIE, WYO. — A report on the insect situation for the entire year of 1954 has been made by Martin M. Poyner, covering the state of Wyoming. Mr. Poyner says that legume insects caused an estimated damage to alfalfa and other legume crops of $7,248,000 last year. Among the pests contributing to these depradations were the alfalfa weevil, which caused moderate to severe damage in alfalfa fields where early control measures were not used.

Tarnished plant bug (Lygus lineolaris) caused an estimated $65,000 damage to the alfalfa seed-growing areas. Reports are that this insect was probably worse this year than in the past few years. Clover seed chalcid (Bruchophagus gibbus) was found to be causing considerable damage in the alfalfa seed-growing areas.

Other insects that caused light to moderate damage to legume crops were as follows: aphids, pea aphid (Macrosiphum pisi), armyworm (Pseudaletia unipuncta), blister beetles (Epicauta sp.), spider mites, and grasshoppers.

The most serious pest of vegetables was the Mexican bean beetle (Epilachna varivestis) which caused moderate to severe damage to garden beans in the southeastern area. Corn earworm (Heliothis armigera) caused severe to very severe damage to sweet corn plantings. Cabbage aphid (Brevicoryne brassicae) and imported cabbageworm (Pieris rapae) caused light damage to cabbage plantings. Squash bug (Anasa tristis) lightly damaged some squash plantings in southeastern area.

European corn borer (Pyrausta nubilalis) was found to be more numerous in sweet corn plantings in Goshen County, than in field corn. In sweet corn plantings, the European corn borer infestation was found to be 5 larvae per 100 plants. A very light infestation which was found in Goshen and Platte Counties seemed to follow the water routes. Potato psyllid (Paratrioza cockerelli) was throughout the potato growing areas. As hot weather approached the lower elevations, the psyllid appeared to seek cooler areas in higher elevations. Some damage occurred to early potatoes in Goshen County. Armyworm (Pseudaletia unipuncta) adults migrated into the State from outside, causing moderate to severe damage to many crops, including barley, oats, alfalfa, grass crops, other hay crops and sugar beets. Good control was obtained in some areas.

Corn leaf aphid (Rhopalosiphum maidis) was found throughout the State wherever corn is grown. Beet leafhopper (Circulifer tenellus), in Goshen County, caused curly top in some areas. Moderate infestations of corn earworm (Heliothis armigera) were in all corn fields that were surveyed for this insect. Clover mite (Bryobia praetiosa) was very abundant in some areas. False wireworms caused considerable damage to fall wheat in some Platte County areas. Grasshoppers caused slight to moderate damage to cropland borders in some areas throughout the State and moderate damage to winter wheat borders in the southeastern part.

European elm scale (Gossyparia spuria) caused slight to severe damage to American elm wherever this tree is grown in the State. Pine needle scale (Phenacaspis pinifoliae) was more numerous in some sections than usual. Cherry-slug was quite numerous on both cherry trees and other closely related plants in some areas.

Codling moth (Carpocapsa pomonella) caused moderate to severe damage to home apple orchards. A cicada, abundant in some areas, damaged apples. Rose leafhopper was very numerous in some of the areas on rose bushes. Boxelder bug (Leptocoris trivittatus) was very numerous wherever this tree is grown, and migrated into houses.

The estimated losses to cattlemen from livestock insects are as follows: cattle lice—$2,602,300, cattle grub (Hypoderma lineatum)—$6,507,960, horn fly (Siphona irritans)—$8,677,280 and sheep ked (Melophagus ovinus)—$2,011,460.

Report Indicates Bugs Active in S. Carolina

CLEMSON, S.C. — Crimson clover has been affected with "Fairy rings" caused by saprophytic toadstools. Agent Lynn, Winnsboro, reports clover died out in round areas about Dec. 20.

Statewide lack of rice weevil infestation is made very obvious in the observation on Clemson's corn yield tests through the weevil belt. Weevils have been too few to give a true evaluation of resistance. Additional evidence comes from survey of farmer corn bins, for infestation right now averages less than 5%.

The following observations were made in the Charleston area by F. P. Cuthbert, Jr., Jan. 6: Cabbage caterpillars—populations very low at present; Green peach aphid — moderate and apparently increasing population on spinach, also present on young cabbage plants; Turnip aphid—moderate infestation on young cabbage, moderate to heavy on turnips and mustard, winged forms unusually abundant; Cabbage aphid—occasional infested plant in old plantings of cabbage and collards; Vegetable weevil—adults abundant around edges of turnip and spinach plantings, larvae causing slight injury to these crops; Cucumber beetles — (mostly twelve-spotted) slightly injuring spinach.

Cattle grubs are very numerous in all parts of the state and cattle examined at Greenville and Columbia indicate that the grubs are earlier than usual.

Four species of cattle lice have been found in examinations of cattle in the Piedmont and Ridge sections of the state. The little blue, Solenoptes capillatus, has been found with ease in the central part of the state. The other three species, Linognathus vituli (Long nose), Haematopinus eursternus (Short nose) and the biting louse (Bovicola bovis) have been found in all parts of the state.

Miscellaneous Pests Reported in Florida

GAINESVILLE, FLA. — Leafhopper (Deltocephalus flavicosta (Stal)) averaging 5 nymphs and adults per sweep was collected from St. Augustine grass (Stenotaphrum secundatum (Walt.)) at Jacksonville. Twenty sweeps were made on a patch of partially sheltered, green St. Augustine grass. No apparent damage was indicated.

Sowbug (Porcellius sp.) averaging 3 to 4 immatures per square yard was collected from St. Augustine grass in the shade under swamp bay trees and on ditch banks with no apparent damage indicated.

Hister beetle (Hister sp.) and mirid (Lygus sp.) averaging 1 adult per plant were collected from St. Augustine grass in Broward County.—H. A. Denmark.

Wisconsin Scientists Express Confidence in Systemics for Better Insect Pest Control

MADISON, WIS.—Sanitation and new pesticides—led by systemic insecticides—will give man an edge in the continuing battle against insects, University of Wisconsin specialists reassured some 160 industry representatives attending the 9th annual Insect Control Conference here on Jan. 5-6.

The two-day conference focused on latest research results, 1955 recommendations, progress reports, and an analysis of the Miller Bill, which sets up the machinery for establishing new residue tolerances.

The specialists discussed the details of tolerances established last summer on about 14 insecticides. They felt that tolerances can be met in most cases, provided recommendations are followed.

Present at the meetings were basic manufacturers, formulators, salesmen, custom applicators, and pest control operators from Wisconsin and nearby states. They presented the university with $544 to establish an annual scholarship in entomology. T. C. Allen, chairman of the entomology department, acknowledged this grant as well as industry-wide support of university research programs.

Most significant promise of insect control in vegetables is the development of systemics, R. K. Chapman and J. E. Casida, university entomologists, ventured. The researchers reported on 1954 tests with 10 systemics as well as other phosphate insecticides on vegetable crops.

One soil-applied chemical was picked up in plant foliage a half hour after spraying, but practically no residue was left after the second day. Once approved, such a systemic might well save a crop from insect destruction just prior to harvest, the specialists predicted.

Although other new chemicals have a wider range, most are extremely toxic to man. But Chapman and Casida pointed out that systemics with a lower toxicity to man are now being developed in commercial and university laboratories.

Two new systemics, once approved, should prove valuable in controlling yellows in carrots and lettuce. To date, tests with two applications of Systox on either carrots or lettuce grown on mineral soil are said to exceed the benefits of seven DDT treatments. However, Systox, or demeton, has federal approval for use on potatoes, but hasn't been cleared for use on other vegetables as yet.

R. J. Dicke, fly control specialist at the university, urged representatives to stress a constant barn cleanup campaign during the housefly season to reduce breeding sites. For general fly control, he suggested spraying wall surfaces with a residual insecticide, such as a 2½% methoxychlor water suspension. Residual insecticides should not be combined with whitewash in a spray.

To keep out flies during milking time, he said space sprays can be effectively applied with a mechanical fogging device. Use synergized pyrethrum, allethrin, or thiocyanates in deodorized kerosene.

He admonished, "Rather than looking forward to discovery of some panacea which will take care of all insects, we should recognize that we have plenty of good tools in currently available insecticides, but sometimes we don't know how to use them."

F. O. Marzke, USDA entomologist working at the University, reported on efforts to control mites in cheese and a cabinet beetle, T. versicolor, in powdered milk.

Lindane has proven to be the most effective miticide tested to date, but Mr. Marzke said the material cannot be recommended in cheese warehouses as taste and residue tests have not been completed.

Of alfalfa insects, J. T. Medler, specialist in agronomy and entomology, said spittlebugs may be a problem on the first crop, leafhoppers on the second. He listed grasshoppers as a major problem on forage and field crops.

One third of the fields surveyed for wireworms last year in the Spencer Silt Loam area of central Wisconsin were infested, E. M. Raffensperger, research assistant in the entomology department, reported. Average number of wireworms per square foot of infested fields broke down as follows: 15.3 in corn, 6 in first-year hay, 5 in second-year hay, and 4.5 in oats.

Nearly three fourths of the infestation occurred in the rolling phase of the Spencer soil area. Wireworms apparently prefer the better drained soils. Mr. Raffensperger observed that nearly three fourths of the infested fields had populations of Agriotes mancus Say, the most destructive species in that area. Other wireworms cause little damage in central Wisconsin.

J. W. Apple, university entomologist, recommended one of the following broadcast treatments in early spring for wireworm control on mineral soils: aldrin or heptachlor, 2 lb. an acre; or chlordane, 4 lb. an acre. Disk or harrow soil three inches deep after application.

For row treatment, applied alone or with fertilizer when planting or side dressing, use half of the amounts suggested for broadcast treatment. Other soil pests mentioned by Apple include cutworms, white grubs, corn rootworms, seed-corn maggot, and seed-corn beetles.

Discussing the Wisconsin strawberry industry, entomologists D. A. Dever and Chapman reported production down to 72,000 crates in 1954 as compared to 156,000 crates in 1945. Insects continue to plague the industry. Most important pest is the strawberry leaf roller, found throughout the state.

Based on 1954 tests in the Kenosha area, and as a result of previous tests, the scientists said they will continue to recommend parathion at ¼ lb. an acre or Dilan at ½ lb. an acre for leaf roller control. Neither of these materials should be used after fruit set.

For a less toxic residue hazard but at a sacrifice of less effective control, they suggested malathion at 1 lb. an acre.

Spittlebugs were reported throughout the state, but by applying toxaphene at 1 lb. an acre or dieldrin at ¼ lb., they can be controlled. If plants are blossoming or fruit has set, use methoxychlor or rotenone, he said.

While strawberry growers continue to battle white grubs with dieldrin, this pest has been brought under control with chlordane in forest nurseries, D. W. Renlund, research assistant in the entomology department, told the conference. He also described adapting a portable pressure-type sprayer to a tree planting machine to control grubs in uncultivated areas at planting time. Alternate rows were treated with aldrin, using only 2½ gal. insecticide for 500 to 600 trees.

Despite no evidence of white grubs at planting time, a later check showed many dead and off-color trees.

WISCONSIN SCHOLARSHIP—The insect control industry established an annual entomology scholarship at the University of Wisconsin at the recent Wisconsin Insect Control Conference in Madison. Above, Prof. Vincent E. Kivlin, right, associate dean of the university's College of Agriculture, accepts the industry's $544 check from James D. Hopkins, left, of Madison. Looking on, from left, are Dr. Alfred Weed of Olin Mathieson Chemical Corp., New York; Dr. T. C. Allen, chairman of the university entomology department, and H. H. Harris of the McConnon Co., Winona, Minn. Industry representatives elected Mr. Harris, Mr. Hopkins and Dr. Weed to an industry insect control committee. The new committee, organized in recent weeks and serving on a temporary basis prior to election, will perpetuate the scholarship and help the entomology department plan future conference programs. Mr. Hopkins is chairman of the committee.

in untreated rows. Grubs had damaged the roots. Trees in the treated rows were in thrifty condition.

Insect control in forest plantations remains a problem—one of getting at the insects, according to R. D. Shenefelt, who discussed possible means, methods and equipment for spraying plantations, then called on industry representatives for practical suggestions.

While the two-day conference concentrated on insect control, diseases of vegetable crops also came under consideration. These diseases cost U.S. vegetable growers roughly $354 million each year, E. K. Wade, university plant pathologist, pointed out. That's more than two and a half times greater than the estimated insect damage to vegetables.

To get the highest returns from fungicides, they should be used for prevention rather than eradication, Mr. Wade urged. He also emphasized timely applications and thorough coverage in an efficient disease control program.

Regarding the respective merits of spraying and dusting, he said that in using the same fungicide, spraying is generally the best bet. Fungicides cost less per acre with spraying, though initial equipment costs and application costs may favor dusting.

While home gardeners seem to prefer dusts, Mr. Wade suggested that more all-purpose materials (for disease and insect control) formulated specifically for use as a spray could be made available for the small grower or home gardener trade. "Several such preparations are already on the market for use as general-purpose fruit sprays," he said.

The insect control conference also brought in an agronomist, K. P. Buchholtz, and a horticulturist, L. G. Holm, to give the latest information on weed control for the coming year.

They said dalapon or 2,2-dichloropropionic acid, a new weed killer, will control quackgrass. For spring applications on dense growth about six inches tall, they recommend 4 lb. to the acre, followed by plowing a week later.

MH or maleic hydrazide is also useful in controlling quackgrass in high value areas, the specialists noted. Apply 4 lb. an acre to quackgrass in early spring and plow or cover the leaves three to six days later, it was recommended.

Corn, from emergence to the three-leaf stage, can now be kept free of emerging broad-leaved annual weeds by spraying with DNBP at 2 to 4 lb. an acre, Mr. Buchholtz and Mr. Holm reported.

Concerning 2,4-D, corn will tolerate up to ½ lb. an acre until it is about 10 in. high. Later applications, the specialists warned, should be made cautiously by using drop nozzles to prevent direct application to the whole plant.

Calspray Product Is Publicized in Digest

RICHMOND, CAL. — California Spray Chemical Corp. and its fungicidal product, Captan, were written up in a 3½ page article in the January issue of "Reader's Digest." The article, written by Marcia Lee, described in considerable detail the mode of action of Captan and the effectiveness with which it controls various fungus diseases of fruits, vegetables, field crops and horticultural plants.

The development of the material at Standard Oil's laboratories at Linden, N.J. was recalled, as was the story of its preliminary testing at Rutgers University, New Brunswick, N.J. and subsequent uses in protecting crops both in the growing stage and in storage and shipment.

The author concludes the article by pointing out that "Captan is one of the safer agricultural chemicals in use today. It has little odor and is low on toxicity to man and animals. If it continues to fulfill its present promise, it should bring better-tasting, longer-lasting and more abundant fruits and vegetables to our markets—and at lower prices."

Board of Managers Named

NEW BRUNSWICK, N.J.—Insley H. Roy of Andover was elected president of the board of managers of the New Jersey Agricultural Experiment Station at the recent quarterly meeting of the board at Rutgers University. He succeeds Louis Sanguinetti of Minotola. Howard M. Sheppard of Cedarville was elected vice president and Van Wie Ingham of the Experiment Station staff was reelected secretary.

Monsanto Safety Winners Announced

ST. LOUIS — Monsanto Chemical Co.'s Texas City, Texas, plant and the Montreal plant of Monsanto Canada, Ltd., have been named the 1954 winners of the President's Trophies awarded annually by the company for the best plant safety records.

At the same time, it was announced that the accident frequency rate for company-wide operations during 1954 was 1.14 major injuries per million man-hours, setting a new record low at Monsanto for the fourth consecutive year. Previous records have been 1.29 in 1953, 1.52 in 1952 and 1.91 in 1951.

GRASSMAN OF THE YEAR

MOSCOW, IDAHO — Milton Branch, Midvale, Idaho, has been named "Grassman of the Year," in a contest open to farmers in Idaho, Oregon and Washington.

Control for Resin Weed Reported

COLLEGE STATION, TEXAS—Resin weed, one of Texas' worst field and pasture pests, can now be controlled economically by the use of chemicals, according to Dr. P. A. Young, superintendent of the experiment station at Jacksonville.

By using one tenth percent of 2,4-D as a spray in the spring when the plants are from one to three inches tall, farmers may rid their fields of these noxious weeds, he says. A second application may be needed about ten days after the first one to kill the plants that were missed the first treatment.

HEADS SOIL GROUP

PHOENIX—Frank Gyberg, Cornville, Ariz. rancher and farmer, has been re-elected president of the Arizona Association of Soil Conservation Districts.

Antibiotics for Plant Disease Control Promising, Scientist Tells North Carolina Group

RALEIGH, N.C.—New agricultural uses for antibiotics and changed recommendations for some insecticides featured the seventh annual Pesticide Conference held at the North Carolina State College Jan. 4 and 5.

Two hundred scientists, dealers, extension entomologists and commercial people attended the meeting and spent two concentrated days wading through problems facing the pesticide industry.

C. N. Clayton, station pathologist, reported tests which showed an agricultural form of streptomycin was effective in controlling fireblight of apples, which fosters the black rot disease. Injury to the foliage occured in some tests, but the leaves did not drop and the condition cleared up in several weeks. Dr. Clayton warned that other experiments showed antibiotics did not control fireblight under all conditions.

He said more information is needed, particularly on whether on not use of the material would contribute to the build-up of resistant strains of bacteria.

L. W. Nielsen, associate in plant pathology, noted that "the antibiotic urge is upon us," in presenting a progress report on Irish potato experiments using mixtures of terramycin and streptomycin.

The material, agri-mycin, appeared inadequate for use in controlling the bacterial wilt organism, but does look promising in curtailing the monumental loss inflicted on early, Eastern North Carolina potatoes by soft rot, a post-harvest decay.

Harvested potatoes were dipped in a solution of agri-mycin, he explained, and where a serious soft rot had developed, there was good reduction of the condition. However, at high rates of the antibiotic, another, previously unidentified fungus, developed.

W. E. Cooper, assistant in plant pathology, told of experiments which indicate a partial solution to poor cotton stands caused by unfavorable weather conditions, such as was experienced in North Carolina last year. The use of either thiram or captan in the seed furrow improved stands considerably at the Rocky Mount Experiment Station.

A big question remains, Mr. Cooper said: "Are conditions at Rocky Mount typical?" Another unanswered question is whether or not the added expense of using these materials in the furrow is justified. He said the experiments have given the plant disease staff a better understanding of factors which cause cotton stand failures.

For the second year in a row, G. C. Klingman, in charge of weed control research, reported favorable results in controlling weeds and top-dressing corn with nitrogen in one operation. Recent research indicates that a mixture of solution nitrogen, a wetting agent and 2,4-D may serve both as a weed killer and as a nitrogen fertilizer for corn, he said.

R. P. Upchurch, assistant in this weed control research, reported on last year's testing three chemicals used to control weeds in cotton. The materials are Karmex DL, CIPC, and DN, applied immediately after cotton is planted.

Explaining research's slowness in making absolute recommendations of such materials, Mr. Upchurch said that theoretically the cotton plant grows through a film of herbicide and is not injured; but the weed seeds are killed as they germinate. This is not always true, however. Occasionally, the cotton is killed and weeds are not. "Our problem is to weed out the uncertain chemicals," he said. "We shall continue tests across the state to learn if these materials are reliable under all conditions."

Last year's tests showed injury from DN; Karmex DL continued to test favorably, (with injury occurring in only one test) and that at a high rate of application. There was no lowering of the yield by such treatment.

High temperature had no effect on Karmex while it caused CIPC to be lost as a vapor. Karmex gave very good control of grassy and broadleaved weeds for four to seven weeks. CIPC gave very good control of grassy weeds and good control of broadleaved weeds for a period of three to five weeks.

Speaking on the second day of the conference, George D. Jones, head of extension entomology, reported one blessing from last summer's drouth. It had reduced 1955's boll weevil population. Indications are that boll weevil carry-over will be the smallest in 10 years.

In some areas, where rain was normal, farmers may expect the weevil population to be normal. But cotton growers of southern and southeastern North Carolina will likely reap a reward of this type from 1954's dry weather.

Announcing a change in insect control recommendations in North Carolina for 1955, Jones said lead arsenate had been dropped completely from Experiment Station tobacco recommendations. The material has long been used by farmers in bait form to control budworms. Additions to recommendations are endrin for tobacco and malathion replacing parathion on vegetable crops.

L. S. Hitchner, executive secretary of the National Agricultural Chemical Association, Washington, asserted that agitation to restrict the use of beneficial pesticides will continue until the public is sold on the idea that food with a trace of insecticide is safer than food exposed to disease-bearing insects.

He discussed the Miller Bill, which requires that manufacturers and agencies observe Food and Drug Administration tolerances in giving directions for use of pesticides, but warned that registration of label does not relieve the manufacturer of responsibility, it simply protects the product.

If Food and Drug issues a definite tolerance for an insecticide, it would amount to an endorsement, Mr. Hitchner said.

George Turnipseed, research entomologist, reported that Systox gave near-perfect control of red mites in 1954 apple experiments. While this research is preliminary, Mr. Turnipseed believes the material offers a residual insecticide treatment that need not be repeated in five or 10 days.

Others on the program included W. G. Westmoreland, extension weed control specialist, chairman; D. W. Colvard, dean of the School of Agriculture; D. E. Ellis, head of plant pathology; Clyde Smith, head of entomology; Paul Springer, USDA, Fish and Wildlife Service, Laurel, Md.; J. C. Ferguson, extension agricultural engineer; C. H. Brett, vegetable insect research; J. R. Dogger, field and forage crop entomologist; R. T. Gast, cotton insect research; W. M. Kulash, corn and stored grain research; H. R. Garriss, extension plant pathologist; C. J. Nusbaum, tobacco disease research; F. A. Todd, tobacco disease research; and N. N. Winstead, vegetable disease research.

AT NORTH CAROLINA MEETING—Two hundred manufacturers, dealers and agricultural workers attended the seventh annual Pesticide School at North Carolina State College, Raleigh, Jan. 4-5. At the top, above, examining the college's 1955 Pesticide Handbook are, left to right, D. E. Ellis, head of plant pathology at North Carolina State; E. E. Beyer, district manager, Niagara Chemical Division, Food Machinery and Chemical Corp., Middleport, N.Y., and R. W. Stephenson, president, Kirby Chemical Co., Severn, N.C. The center photo shows a break between sessions for a short course in physical education. The man behind the eight ball is Henry J. Wood, sales supervisor, Virginia-Carolina Chemical Corp., Richmond, Va. Others, left to right, are F. F. Hendrix, president, Hendrix-Barnhill Co., Greenville, N.C.; John N. Thompson, vice president, Graham Chemical Co., Greensboro, N.C., and J. S. Polk, assistant to manager, Wilmington, N.C. district, Virginia-Carolina Chemical Corp. At the bottom, W. G. Westmoreland (center), North Carolina extension weed control specialist and chairman of the 1955 Pesticide School, enjoys one of his few relaxed moments during the busy two days. On the terrace of the State College Union Bldg., he swaps jokes with W. A. Welch, Raleigh, N.C. field representative, E. I. du Pont de Nemours & Co., left; and J. T. Conner, Jr., entomologist, Taylor Chemical Co., Aberdeen, N.C.

Corn Seen as Help in Giving Flexibility to California Agriculture

DAVIS, CAL.—A new, more flexible crop pattern may be California's most important dividend from the boom in field corn, according to Fred N. Briggs, dean of the University of California College of Agriculture at Davis.

"I do not believe we're destined to become a great corn state," he told a recent conference, "but corn provides a flexibility in the cropping system that is valuable to us."

"Considerable progress has been made in developing hybrids for our own use," he said, "but we have not yet put one together to match the best of the Midwest hybrids."

California farmers are producing 110-bu. corn this year with Midwest varieties. And some growers are aiming at 125 bu. per acre, reports Dale G. Smeltzer, agronomist in charge of the University of California's corn breeding project at Davis.

California-developed hybrids are still several years away, Mr. Smeltzer said, and growers will continue to plant midwest varieties. To help boost yields with these hybrids, the Davis agronomist also has been studying spacings, fertilization and irrigation.

DECEMBER OATS

AMERICAN FORK, UTAH — A farmer here in 1954 cut a second crop —a full crop of oats on his farm, after harvesting early peas in July. Ernest Hindley, who believes in utilizing his land, was cutting, binding and shocking a full crop of oats in December, even though snow was expected daily. The crop of oats was planted around July 15, immediately after the farmer harvested a full crop of spring planted peas.

Importance of Understanding Soil Differences Stressed at Illinois Fertilizer Conference

URBANA, ILL.—Illinois fertilizer people were urged to become better acquainted with the soils in their areas at a session with University of Illinois agronomists, Jan. 6-7, and they were presented with information to help them with the job.

The theme of the conference was that soils were different between areas, sometimes very close areas, and that agronomists had worked out reliable means of understanding them.

R. T. Odell, University of Illinois soils classification expert, described the four distinct major Illinois soil types, usually found in definite areas. Northeastern soils have a tight, calcareous subsoil and are generally low in phosphorus; central and northwest soils have a good structure and are generally well supplied with nutrients; the south central area is low in everything and has a tight, acid-clay subsoil. The sandy soil of the state is found in five places—in the Kankakee, Illinois, Mississippi and Wabash River bottoms and in Mason County.

A. L. Lang, who is in charge of soil experiment fields, told how the thorough network of experiment fields had given information on the soil areas. He lists four lessons the fields have taught.

1. Soils vary widely, even between close areas.

2. Average corn yield in Illinois is 56 bu., well above the average of 39 bu. on the no-treatment plots of the fields, showing the use farmers are making of fertilizer. At the same time, the average is well below the 97 bu. average on completely treated plots, showing the potential for fertilizer use.

3. Fertilizer can be used to improve the physical condition of the soil as well as to supply nutrients, through its use on the right crops.

4. It takes all nutrients in a proper balance to raise good crops.

R. H. Bray described the soil test as a tool for taking the lessons from the soil experiment fields to the farms of the area. The soil test was developed by correlating chemical analyses of the soil with cropping experience on the fields.

Mr. Bray warned, however, that soil tests need the right interpretation to be useful. He stressed the importance of knowing the cropping and soil treatment history as well as of taking adequate samples.

The nitrogen test is not used in Illinois because cropping and soil treatment history are a better guide, he stated.

A. U. Thor, who is in charge of soil testing, reported that every area of the state is well served now by soil testing laboratories. Extension offers a complete service in every county, although a few of the counties have no laboratories of their own. He also reported a wide distribution of service offered by commercial concerns.

C. M. Linsley, extension man, emphasized that the only way to fit a fertilizer to the farm was through the soil test. No one formula can work in every case, he said.

L. T. Kurtz said that with the exception of a few areas in which boron was deficient for alfalfa, trace elements are not a limiting factor today in crop production in Illinois.

S. W. Melsted described the tissue test as a good evaluation of a farmer's fertilizer program and good for planning future programs, but he said it was of little value for specific crops, because by the time farmers had the information it was too late to do anything.

In another report, Mr. Melsted pointed out that organic material doesn't have to come from legumes to be useful in improving soil structure and adding nutrients. Corn stalks turned down are just as good as legumes, he said, providing farmers add commercial nitrogen to equal the nitrogen in the legumes.

E. H. Tyner warned of the danger of losing nitrogen from leaching in soils through which water runs freely. If the soils don't lose much water through percolation, nitrogen in some forms can be added ahead of the time plants need it, provided the temperature is below 55° so that the nitrogen won't be changed into a form which can pass off into the air, he said.

J. H. Bigger, of the Illinois Natural History Survey, said that effective and economical materials and methods are available for preventing most of the losses caused by seed and root feeding insects of corn.

C. Y. Arnold, vegetable soils specialist, described the specific use of the soil test developed for vegetable production.

Dr. M. B. Russell, head of the Agronomy Department at the University of Illinois, presented a report on "Guide to the Management of Illinois Soils."

He said that to select properly the soil management practices for an individual farm, specific information was needed on (1) the objectives and goals of the farmer, (2) soil type, (3) production limitations imposed by soil resources, and (4) nutrient status of the soil.

Dr. Russell made these general points about the various fertilizer elements:

Phosphorus—"It has long been recognized that many Illinois soils contain insufficient phosphorus for efficient levels of crop production."

Potassium—"Although Illinois soils contain a large amount of total potassium, the amount of this element in the exchangeable or plant-available form is too low in many soils for efficient levels of crop production."

Nitrogen—"All the possible sources should be considered in meeting crop demands for nitrogen. These sources include soil organic matter, crop residues, legumes, manure and nitrogenous fertilizers."

Dr. Russell told the group that "under present price conditions there are many situations where synthetic nitrogen can substitute for legume nitrogen in crop production."

FARM INCOME DOWN

DENVER—Colorado's agricultural income in 1954 will total about $440 million, according to an estimate by Floyd K. Reed, U.S. Department of Agriculture statistician in Denver. The state's farm income was $483 million in 1953 and $603 million in 1952. The drouth was blamed for cutting the 1954 figure.

Fungicides Show Promise in Stopping Smog Damage

BERKELEY, CAL.—The possibility that chemicals used to destroy plant fungi can be applied to protect plants from smog has been developed by University of California scientists. Preliminary field tests have confirmed laboratory findings that certain organic fungicides can protect plants from smog damage.

Dr. James B. Kendrick, plant pathologist, has reported that bean plants dusted with zineb, (zinc ethylene bisdithiocarbamate) and thiram (tetra methylthiuram disulfide) during the recent smog siege in Southern California suffered little or no damage. Unprotected plants in the same plot showed typical damage.

The plants were given relatively heavy dosage of fungicides, according to Dr. Kendrick, but tests will be continued to determine the most economic levels of application.

Other dithiocarbamate compounds were found to afford varying degrees of protection, but none as effectively as zineb. This fungicide is already widely used against foliage diseases, including downy mildew on spinach. Spinach is one of the smog victims in Southern California.

The preliminary tests also indicate that dusting was more effective than spraying since the chemical had to coat the underside of the plant leaves in order to give protection. Coating the topside only did not stop smog damage.

Investigations into other methods of protecting plants from air pollutants as well as the basic causes of this damage are being continued at the Riverside campus of the University.

EZEKIEL S. BARCLAY DIES

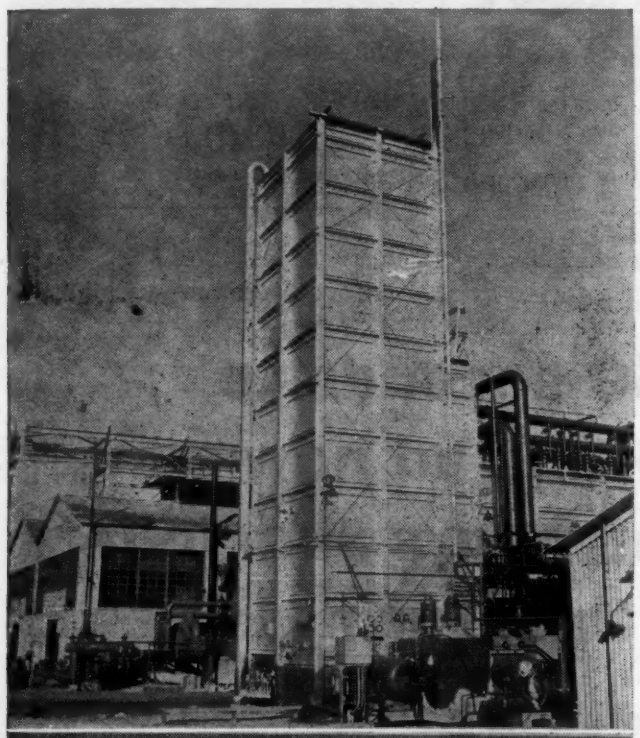
CRANBURY, N.J.—Ezekiel S. Barclay, founder and president of Chamberlin & Barclay, Inc., manufacturer of fertilizer and farm produce dealer here, died Jan. 1 at the age of 83. He founded the firm 50 years ago.

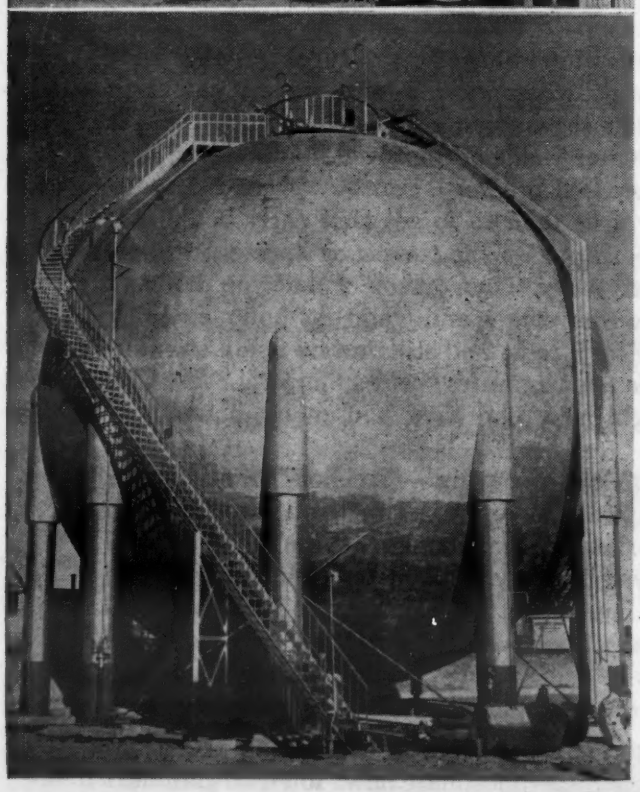
NOW ON STREAM

Grace Chemical Co. Dedicates New $20 Million Ammonia-Urea Plant in Memphis Ceremonies

By LAWRENCE A. LONG
Editor of Croplife

MEMPHIS—Speakers at the Jan. 6 dedicatory service here, marking the opening of Grace Chemical Company's new $20 million ammonia-urea plant, told more than 600 guests that this type of enterprise is "a symbol of what makes this country great." Appearing on the program were representatives of the W. R. Grace Co., parent organization, officials of the City of Memphis and the state and federal governments. The new plant, now on stream for the production of ammonia, will soon be producing urea for use both as fertilizers and as animal feed supplements.





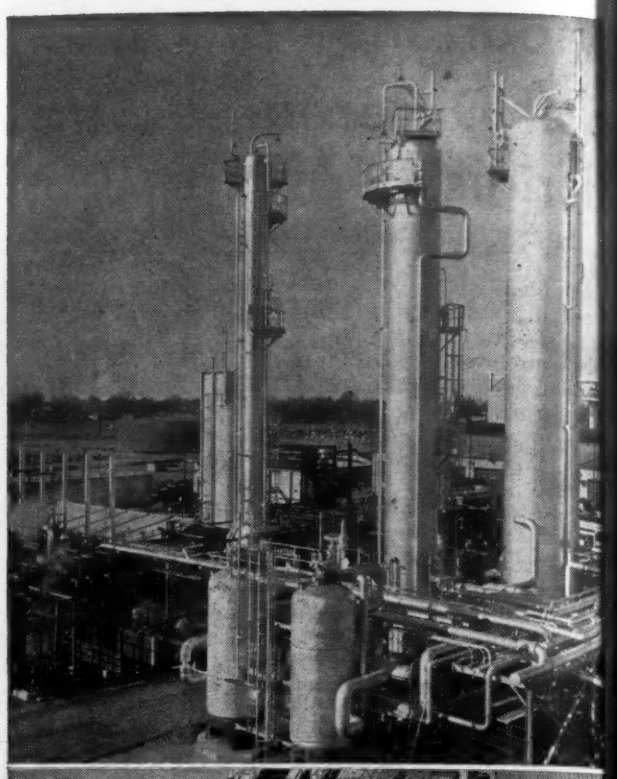
Ceremonies of the day began with a luncheon at the Peabody Hotel, with W. J. Haude, Grace Chemical Co. vice president as host. The group then rode to the plant in chartered buses and assembled in the new warehouse for the program.

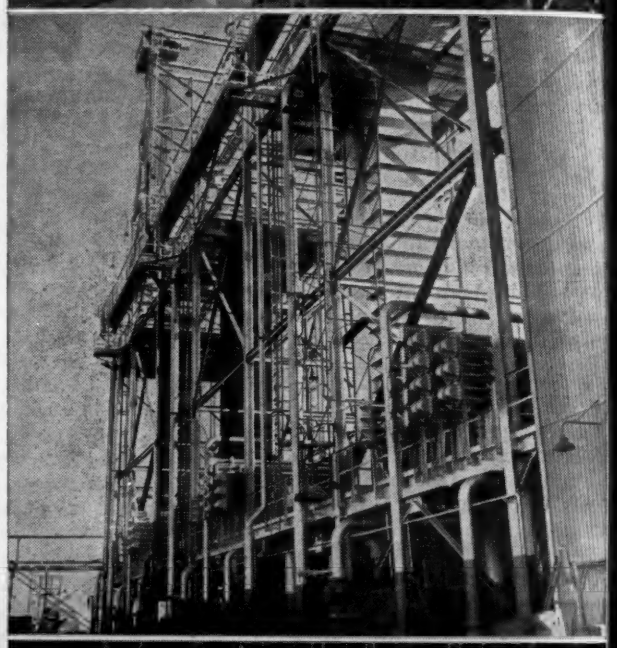
Keynoting the remarks of the afternoon, Hon. Samuel W. Anderson, assistant secretary of commerce, Washington, D.C. said that the production coming from the Grace plant and others of similar nature, "is going to be needed to meet the demand of the growing world population." He noted that the world today is faced with a continuing problem of providing an adequate supply of food. Thus, the Grace plant, with its output being utilized both in the greater production of crops plus better animal feeding, is contributing much toward the needed end.

Acting as master of ceremonies for the afternoon was Frank Ahlgren, editor of a Memphis newspaper, "The Commercial Appeal." He introduced various officials of the Grace company, including W. G. Holloway, chairman of the board of directors; J. Peter Grace, president; Charles E. Wilson, formerly president of General Electric Co. and chairman of the board of Grace Chemical Co.; William P. Gage, president, Grace Chemical Co.; and John G. Carriere, plant superintendent.

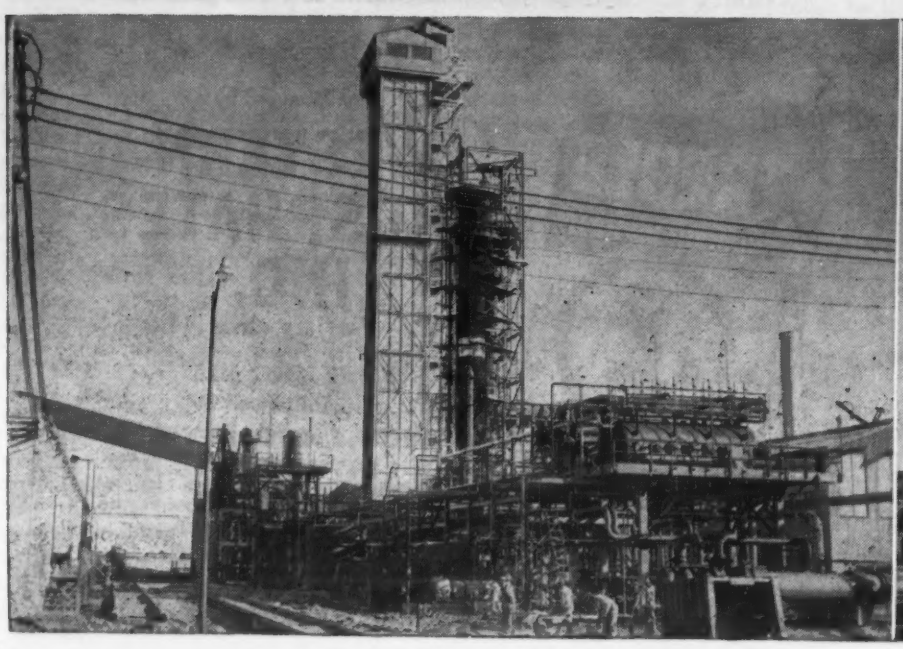
Each made appropriate remarks regarding the relation of the new enterprise with the rising economy of the south and the increasing need for food and fiber throughout the nation and the world.

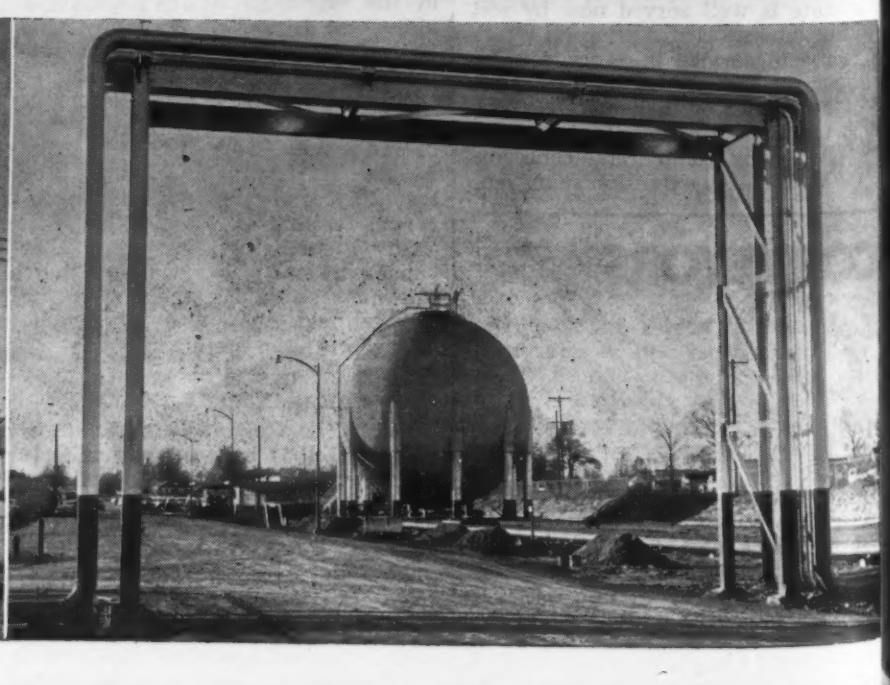
(Continued on page 17)





AT THE NEW GRACE PLANT — Here are some of the installations inspected by guests of Grace Chemical Co. at the dedicatory program in Memphis Jan. 6. Upper left: Air separation unit and the huge Hortonsphere used for storage of anhydrous ammonia. Across bottom: Prilling tower and urea manufacturing section at left. At right: anhydrous ammonia transmission lines and Hortonsphere storage in background. Top photo, right: synthesis gas purification towers. Middle picture shows ammonia synthesis section and lower one is dramatic shot of pipe bridge with ammonia and gas transmission lines. (All photos by Memphis Commercial Appeal).





Special Retail Section

Better Selling

Richer Fields for Dealers

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

Small New Mexico Farm Pays With Help of Chemicals

HOBBS, N.M.—B. C. Fancy, who has an eighty acre irrigated farm, used to wonder how he could make a living on such a small place. The average farm in this area is from 160 to 320 acres, and even this seemed too small when farm prices began to drop.

Now five years after buying the raw land and putting it into cultivation, Mr. Fancy has a 20-cow dairy herd, a new car and pick-up and a nice country home only three years old. He started with one old tractor and some broken-down equipment, which has been replaced by modern machinery.

In getting to his present status, Mr. Fancy had no rich relatives or oil wells, and he never won a sweepstakes. He is a man of great respect among the farming goliaths of the area and his banker is always glad to see him.

He did it by a lot of hard work and scientific farming.

"I found out the value of fertilizer," he said, "and now I put plenty of it on my crops. We thought a bale of cotton per acre was tops for this area. This year I made two bales and used very little more water or labor.

"It was the same way with alfalfa and maize. I find that every crop responds well to commercial fertilizer. By using it with manure, I have been able to grow almost enough feed for my cows and had some alfalfa to sell."

Mr. Fancy fights the insects by hooking up his sprayer or duster and going over the crops regularly. Then when the stalks are too high for the use of farm machinery, he hires an aerial spraying contractor to finish the task. He has found the best way to control insects is to get at them before they build up to damaging numbers.

This winter he is spreading cotton burrs back on the land to further boost yields.

"Big farming is fine," he says, "if you have the acres. But it doesn't take an immense farm to make a good living for a family. Go at it scientifically, listen to expert advice about insects and fertilizer, work hard and hold down unnecessary overhead.

"Making one acre produce to capacity is more profitable than half-heartedly farming three or four."

New Spray Developed For Zinc Deficiency

DAVIS, CAL.—Vineyards suffering from zinc deficiency will be sprayed in 1955 in widescale tests of a promising new treatment developed on the Davis campus of the University of California.

The new treatments make use of recently developed zinc-containing synthetics. The preliminary tests were carried on in the University vineyards and in a few trials by farm advisers cooperating with James A. Cook of the Department of Viticulture.

Mr. Cook says that the foliage sprays in most cases completely corrected zinc deficiency symptoms in seriously affected vines.

Opportunities for More Efficient Fertilizer Use in Western States

In the 11 western states, which comprise about one third of the land area of the continental U.S., past geological forces have produced much sharper relief than in other regions of the country. Many of the mountains are higher and more rugged and the valleys and canyons deeper.

In consequence climate may change abruptly from place to place, brought about in part by the resulting differences in elevation as well as by the particular configuration of the hills and mountains themselves. High mountain valleys may be subject to frost any month of the year, while other locations have frosts only in occasional years.

Along the Pacific Ocean summer temperatures are usually cool because of fogs, while beyond the Coast Range in the interior the temperatures may be 30 to 40° F. higher. Winters in the interior are usually colder than on the coast. Rainfall varies from 2 in. to more than 100 in. per year, coming mainly in the winter.

Along with the great variations in climate, the fertility of the soil varies markedly within short distances, often in the same orchard, pasture or field. As a result of the geological formations exposed to weathering and erosion, the parent materials of the western soils vary widely.

Differences in the duration of weathering, in topography and in plant cover (together with other biological factors) in addition to the variations in climate have produced soils showing marked differences in pH, in the presence of alkali, salines or other toxic substances and in the relative ability of each soil to furnish nutrients to the crops being grown.

As a whole, soils in the western states are deeper, are less leached during development and have been farmed for a shorter time than soils elsewhere.

In consequence, the depletion of their virgin fertility, except for nitrogen, has usually not progressed as far as elsewhere, nor has this depletion been uniform. Local areas do occur, however, where deficiencies are just as acute as anywhere else.

Throughout the West, drouths of about 6 months' duration are usual. Many areas are desert. Before irrigation, moisture rather than plant nutrients was, in general, the most deficient factor in crop production.

Irrigation development during the last 100 years has gradually brought intensive production to important segments of the region. Typically, part of a valley may have been irrigated early. Subsequently and progressively, other areas within the valley may have become irrigated.

In some sections at least, moisture had been the limiting factor and from a fertility standpoint these lands were almost virgin at the start of irrigating. Other lands when first irrigated have, however, shown signs of nutrient deficiencies from the start.

With the completion of the transcontinental railroads and the realization that many areas of the West could produce fruits and vegetables of good quality "out of season" suitable for shipment to the eastern markets, there has been a marked increase in acreages planted to these crops—first in citrus, then in deciduous fruit and somewhat later in vegetables.

Historically, growers of these crops with their high per-acre gross returns have applied adequate to more-than-adequate amounts of fertilizers to obtain reasonable responses in yield and quality of product. As a result, the use of nitrogen except on the most fertile soils has become widespread with these crops.

However, experimentation, aided by visual deficiency symptoms and at times by laboratory tests, has demonstrated that many local areas need one or more of the following elements to give crop responses: zinc, phosphorus, potassium, boron, manganese, copper, iron and magnesium. In fact, the application of zinc in California and in the Columbia Basin is second only to nitrogen in supplying

(Continued on page 16)

— EDITOR'S NOTE —

The accompanying article is adapted from "Fertilizer Use and Crop Yields," a report published this month by the U.S. Department of Agriculture. The publication is a result of studies of the Fertilizer Work Group, National Soil and Fertilizer Research Committee, in cooperation with the Soil and Water Conservation Research Branch and the Production Economics Research Branch and Agricultural Research Service, USDA. This article, on the western states, was prepared for the report by John P. Conrad, professor of agronomy, College of Agriculture and Agricultural Experiment Station, University of California. Mr. Conrad was Work Group representative for the western states. The Work Group was appointed in March, 1951, and the figures in this report are based on 1950 and 1951 data. Nevertheless, they should prove valuable as a guide to the potential fertilizer market in the years ahead. An article from this report, on opportunities for more efficient fertilizer use in the North ast states, appeared in the Dec. 27 issue of Croplife, an article on southern states appeared in the Jan. 3 issue and one on the North Central states appeared in the Jan. 10 issue.

Table 1—Estimates of quantities of commercial plant nutrients used in Western States in 1950 and those needed for level of production attainable in 1955[1].

State	1950 N tons	1950 P_2O_5 tons	1950 K_2O tons	1955 attainable[1] N tons	1955 attainable[1] P_2O_5 tons	1955 attainable[1] K_2O tons
Montana	1,943	4,370	45	4,676	9,930	90
Idaho	9,006	20,760	555	14,950	26,276	555
Wyoming	386	1,752	0	2,320	3,839	0
Colorado	2,432	6,350	0	6,116	10,271	0
New Mexico	2,208	4,048	40	7,490	8,663	40
Arizona	18,068	8,779	2,185	27,245	13,115	2,185
Utah	2,286	2,453	0	4,893	4,339	0
Nevada	131	550	0	876	2,476	0
Washington	8,839	9,743	3,443	23,328	12,733	3,988
Oregon	15,783	10,594	2,557	27,018	15,556	4,659
California	125,653	59,867	12,216	171,985	101,509	13,379
Total	186,735	129,266	21,041	290,897	208,707	24,896

[1]Estimates of quantities of commercial plant nutrients used in 1950 and of those needed for level and pattern of production attainable in 1955. U.S. Department of Agriculture, Jan. 31, 1952. (Processed.)

Table 2—Planted acreage and average use of N, P_2O_5 and K_2O for major crops in the Western States during 1950.

Crops—	Total acreage 1,000 acres	Nutrients N lb./acre	Nutrients P_2O_5 lb./acre	Nutrients K_2O lb./acre
Corn grain	723	4	4	2
Wheat	14,575	1	.7	.07
Barley	5,331	5	1	.1
Oats	2,092	1	1	.07
Sorghum grain	214	10	5	3
Rice	250	31	.1	.004
Cotton	1,062	50	14	.5
Sugar beets	665	45	38	4
Potatoes	454	44	34	10
Dry beans and peas	647	3	4	...
Fruits and nuts	1,897	58	11	5
Seed and specialty crops	521	37	11	3
Vegetables	1,029	54	42	19
Hay	8,772	1	8	.2
Pasture and cover crops	3,526	5	8	.5

Doing Business With Oscar & Pat

When Oscar Schoenfeld came to the fertilizer store at 6:55 one morning — he was always five minutes early—he saw a light truck draw up at the loading platform ahead of him, and out stepped Ezra Hewlitt, a rangy, but bent-shouldered local carpenter who had a reputation for being a "bear for work."

"Hi, Oscar," greeted Ezra. "I'm glad to see that somebody else around this sleepy town gets to work when they should. I'm always early, I am, and I like to see other folks be early, too. That's what's wrong with this country—people sleep too late and by the time they get started to work the day's over. That's why costs are so high all over the nation."

"I'm always early, too," Oscar said, slipping his key into the Yale lock, and at the same time glancing at some tools and plywood lumber on the truck. "What are you here for?"

"Didn't Pat tell you?" said Ezra. "He gave me a rough layout of something he wants built for display. I cut out the pieces in my shop and came down here to finish it this morning."

Oscar's lips tightened as they always did when he realized money was going to be spent, money which touched his pocket-book. "Is it gonna be expensive?" he asked, going into the warm display room, followed by the peppy Ezra and his tool box.

Ezra chuckled. "Not when it's built by me, for I allus give a good day's work for a good day's pay. Now some of these other guys—huh—then it would be expensive."

Oscar took off his coat and hat, hung them up and sat down at his desk. There was a deep frown on his face. He didn't like this tendency of Pat's, to go ahead with display ideas and not tell him anything about it. But, as Pat had once said, "Oscar, you keep the pencils sharp and watch the costs and I'll handle the sales and advertising. If we stick to that we'll make a wonderful team."

Still frowning, Oscar worked at papers on his desk, casting glances now and then at the busy Ezra who had brought in many small pieces of plywood, set up a saw horse with a few boards across it and was assembling the plywood pieces. All the while Ezra smoked a vile, blackened corncob, the fumes from which were scorching.

Ezra watched Oscar, too, working at the desk. "Oscar," he said, "if all the world was like you and me—working hard all the time, with no laying down on the job—things would be much better. We know how to work. Most other people don't."

Strangely enough, this praise was soothing to Oscar. He felt himself expanding. Now here was a man who had the right idea. Why weren't there more people like this, instead—instead of crazy ones who worked nights on crazy display ideas, then slept late mornings? Why couldn't people work regularly from 7 to 5? Those were the r e g u l a r business hours. They should be kept.

"A business firm has to see that a profit is made if employes are to be paid," Oscar observed. "That takes work—and enough of it. Somebody has to be responsible."

Much as Oscar wanted to, he did not ask Ezra any more about the display he was building. That was Pat's business. If it cost too much he would scorch his partner about it. Let him fall into the trap. And these display ideas now and then—huh—as if they brought in business. Better go out and collect the money due the firm and tell some of these delinquents where to "head in."

About mid-morning Pat McGillicuddy arrived, tired and yawning. "Hi, Oscar," he greeted. "Gosh, am I tired this morning. That farm meeting I attended lasted until about 11:30. But it was interesting. Got a chance to get in some good words about fertilizer."

Oscar grunted, his lips tight. "Get any orders—or collect any accounts?"

"No," Pat admitted. "This was an educational meeting. I couldn't solicit business actively."

"Then what did you go for?" Oscar asked coldly.

Pat chuckled. He knew Oscar and his dollar-wise philosophy and didn't let it rile him too much on most occasions. "Oscar," he said tactfully, "If you have time, come take a look at this display. I think it will be a dilly and get us lots of business."

Oscar got up, and said, "You've said that before."

Pat ignored the remark, as he moved to the area where Ezra was working. Pat looked down and saw a miniature shed all boxed in but without a roof. The shed had bins on both sides of a center dividing wall."

"Oscar," said Pat enthusiastically, "this is a miniature of our bulk fertilizer warehouse. It will stand on an island platform so that the customer can look down into it very easily. The bins will be filled with various types of fertilizer. The farmer can stick his hands into each bin, feel the fertilizer, and this should help induce him to buy."

"Huh," was all Oscar would say.

"Then," continued Pat, "we will post a list of fertilizers and prices on a big cardboard near this miniature warehouse, each bin of fertilizer will be identified. Another sign will contain a blown up picture of our two bulk spreaders, with a list of spreading prices. I think this display will bring fertilizer to the mind of every farmer who comes in here during the winter for other farm supplies."

"Why do we have to do that?" Oscar asked stubbornly. "We've got the big bulk warehouse. Why do we need this— this— small one?"

Pat looked very patiently at his partner. "Because all farmers do not go out back to look at the big warehouse. But when they see this small replica in our showroom they'll be reminded of fertilizer every time they see it. That's called suggestion, me boy, and it should sell fertilizer."

"Well, you'll have to sell a lot of tons to pay for the cost of this display," Oscar pointed out. "Ezra gets about $3 an hour and our profit on a ton of fertilizer isn't so high— the way you give discounts."

Pat was exasperated. "I'll tell you what, Oscar," he said. "Since you object so much to spending money for such a display, I'll pay Ezra out of my pocket—if I don't sell enough extra fertilizer in a month to pay it."

"Now you are talking sense," Oscar said, with a tight smile. Feeling better, he walked triumphantly to his desk and sat down, inwardly happy about his little victory.

Pat and Ezra looked at each other and each shook his head from side to side slowly as if saying, "Oh, my, oh my!"

Unique New Year's Pledge Urged by California Group

SACRAMENTO, CAL. — A new year wish expressed somewhat differently from the usual manner was issued by the California Hay, Grain & Feed Dealers Assn. in its latest bulletin.

The association bulletin offers 10 proposals to its members, urging each one to pledge himself to observe them for bettering himself, his business and the industry during the coming year. These are the 10 proposals:

1. Avoid the defamation of a competitor's character by casting reflections on his religion, race or creed.
2. Avoid selling that casts aspersions on a competitor's honesty or integrity.
3. Do not state or suggest that your competitor's products are of questionable value, but rather point out superior additives or improvements that raise your product from a good one to a better one.
4. To wear a cheerful countenance at all times and give every customer and competitor and fellow man you meet a smile.
5. Avoid the promise of outservicing all competitors in order to gain new business—and failing of continuous performance.
6. Conduct yourself with dignity to all salesmen or people in the trade. Give them a fair chance to tell their story.
7. Be a gentleman at all times, especially at chance meetings with a competitor at a prospect's place, even though you feel the competitor may have done you an injustice.
8. Talk over grievances fancied or real with your competitors. You'll find there is no real basis for a grievance after a conversation.
9. Avoid advertised sales that distort values or bait prices on items that are not offered after the customer arrives.
10. Work for better public relations, praise industry progress, strive for better retailing, and thereby put the industry on a higher plane that will bring respect and happiness in each community.

California Farm Outlook Optimistic

SAN FRANCISCO — Preliminary estimates indicate a gross cash farm income in California of about $2,450,000,000 in 1954, down about 7% from 1953, according to an estimate by Carl W. Wente, San Francisco, president of the California State Chamber of Commerce.

In a recent statement Mr. Wente said that although the U.S. Department of Agriculture expects further decreases in gross farm income for the country as a whole, "local farm economists are somewhat more optimistic with regard to the California outlook. This is due in part," Wente said, "to the preponderance of fruit and vegetable specialties in this state, which crops are more sensitive to changes in the national level of business activity."

TO RESIGN POST

OGDEN, UTAH—E. J. Fjeldsted, secretary-manager of the Weber Basin Water Conservancy District, has been requested to resign his position as manager-secretary of the Ogden Livestock Show so that he can devote full time to his water promotion position. He said he would resign as soon as the board of directors could appoint a successor.

SHOP TALK

OVER THE COUNTER

FOR THE DEALER

By EMMET J. HOFFMAN
Merchandising Editor

We knock ourselves out giving service, comments 30-year-old Walter Ross, head of El Reno (Okla.) Seed & Feed, when he is asked about his firm's remarkable growth during the past five years. Fertilizer, feeds and seeds are the store's main lines in the prosperous dairy and small grain area surrounding El Reno.

It was less than five years ago when this same business, showing no signs of growth and little profit, caused the disgruntled owner to sell out.

Today, the new dealership at El Reno, in the same market, in the same building, with the same selling tools, is one of the fastest growing and most profitable in the entire Southwest.

How did it come about?

Service and hard work by an enthusiastic staff seem to summarize the progress of Mr. Ross and his firm.

In 1949, when the El Reno business was for sale, Henry Ross, a farm supply dealer at nearby Chickasha, Okla., investigated its potentiality and found it to be excellent. His son, Walter, who had just graduated from Oklahoma A. & M. College, got his opportunity when he was placed in charge of the El Reno firm.

Within a year the business volume had doubled, mainly because "we just knock ourselves out giving service."

Methods Used

Here are some of the specific policies and methods which have worked so well for Mr. Ross, as outlined in Checkergraph, a company publication of the Ralston Purina Co.

Two livewire outside salesmen, who brought only enhusiasm when they were hired, have developed a successful sales-serviceman plan. They share the outside work, with their schedules so arranged that one of them is always at the store. The El Reno market has been divided into areas, and two full days are spent each week calling on and servicing customers' needs.

Fertilizer Sales

Derall Huchtemann, 28, a college graduate in agronomy, handles most of the fertilizer and seed business. He checks seed quality and advises on fertilizer use and application.

There are five other employees, one in charge of the store's double-entry bookkeeping system, another handling seed cleaning and treating, and three for sales and delivery.

Mr. Ross is a firm believer in having a planned program of local advertising. He always has two billboards in use, plus a weekly ad in the local newspaper.

A special service car, with the firm's name boldly painted on it, is used for customer calls.

Mr. Ross holds two group meetings a month. These meetings are small and informal, and tie the customers to the store much better than larger meetings.

Mass Displays

A spacious, well-lighted display room is kept neat and attractive and Mr. Ross claims that mass displays carry a powerful sales impact.

"May I help you, sir?" "Thank you!" "Please come back again." These and similar expressions of courtesy are used without fail by all El Reno Feed & Seed employees. They've found by experience the value of the little things that don't cost a cent.

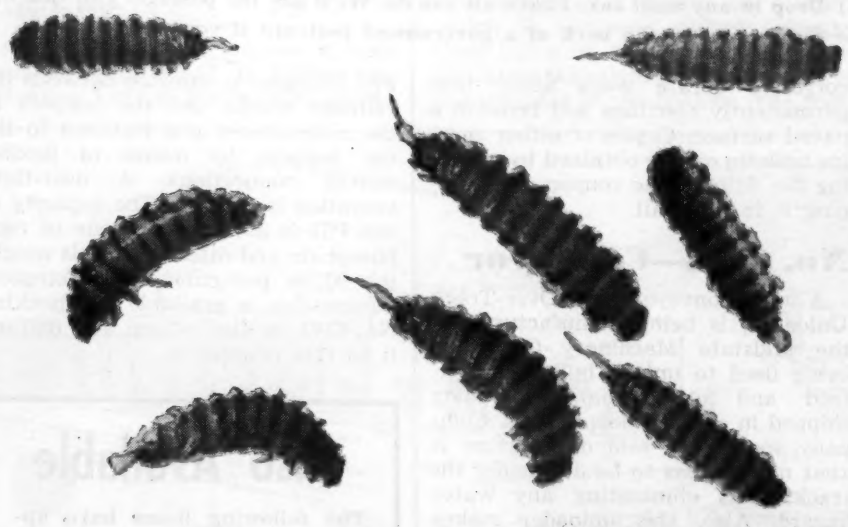
The store's atmosphere is alive and bristling. Customers are impressed with the wonderful spirit of teamwork which exists among all employees. One employee puts it this way:

"Of course, I work for him (Walter)," he said, "but I think he's one in a million. He goes with us to all training meetings and buys a steak dinner on the way. And we certainly can't complain about our pay, since we are generally given bonuses, depending on the profits."

AGRIFORM GROUP—Shown above are representatives from Agriform Co., Inc., Wasco, Cal., who posed in front of the firm's booth at the December meeting of the Agricultural Ammonia Institute in New Orleans. From left to right are Bob White, William Remsen, Mrs. Mitty Terall, Hollis Barron, J. C. Anderson, Mrs. Jackie Smith, Marshall Piersen, William Rockwell, Lyle Neff and D. W. Galbraith.

BUG OF THE WEEK

Mr. Dealer--Cut out this page for your bulletin board



Khapra Beetle

How to Identify

The adult khapra beetles are small (from 1.8 to 3.0 mm. in length), pale red-brown to dark brown or black in color. Although it is hairy on top, the hairs are often rubbed off which gives the adult a slick appearance. The larvae, as shown above, are yellowish brown, clothed with long, brown hairs. The underside of the body is pale yellow and when viewed from above, the arrangement of segments gives the larvae a ringed appearance.

Habits of the Beetle

The pest thrives in areas of relatively high temperatures, with the optimum being between 90° and 99° F., although the upper limit for their development has been placed at 104° F. Larvae cease to develop at 46° but on the other hand, can resist temperatures as low as 14° for short periods. Adult females lay up to 126 eggs. The life cycle varies in length from 4 to 6 weeks to several years, depending upon temperature and food supply. There may be as many as 12 generations a year in India, where it is a native. Larvae are highly resistant to starvation and can live for months or even years without food. It has but feeble powers of migration, so its spread has been through avenues of trade.

Damage Done by Beetle

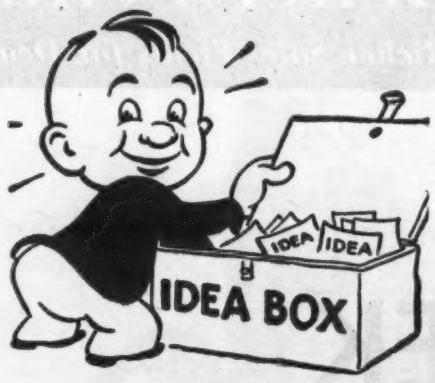
Stored grain damaged by khapra beetle looks as if it had been infested by the lesser grain borer. Khapra beetles not only live on grain, but they also contaminate grain by leaving quantities of barbed hairs which are said to be a serious menace to humans if swallowed. Khapra beetle damage to stored grain is complete, as illustrated by the example of a California warehouse which despite its efforts to control the beetle, finally wrote off as a total loss, some 300 tons of grain. In addition, the firm abandoned the warehouse for grain storage purposes.

Control of Khapra Beetle

The insect itself is not materially more resistant to fumigants and residual insecticide sprays than are many other stored grain pests. But it is still more difficult to control because of the habit of larvae crowding into spaces in the structure of buildings and bins, where it is almost impossible to reach them with sprays or fumigants. Little success has been achieved so far in eradicating this insect from premises that become infested. The establishment of quarantines to restrict movement of grain between areas where the beetle is known to exist and those thought to be free from the pest is regarded as one means of controlling the spread of the insect. The transportation of infested grain, feed, or seed in railway box cars can result in the wholesale contamination of the rolling stock of the country, with the danger that infestation will spread throughout the country, a representative of the U.S. Department of Agriculture has observed.

Photos of khapra beetle furnished Croplife through courtesy of the U.S. Department of Agriculture.

Previous "Bug of the Week" features are being reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6195—Catalog

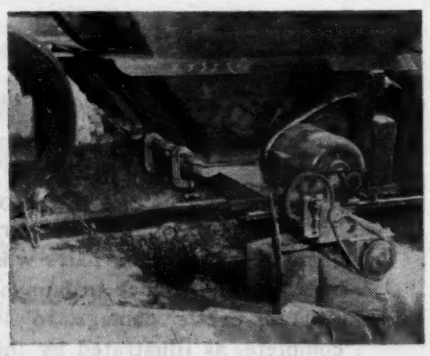
A complete catalog of equipment and supplies needed in the operation of anhydrous ammonia bulk stations and distribution points has been issued by the Pasley Manufacturing & Distributing Co. Nearly a hundred items are described and illustrated in detail in the 50-page booklet. The catalog also contains a handy NH_3 safety section which includes (1) properties, (2) vapor pressure facts, (3) safety precautions and (4) chemical properties of ammonia at various temperatures. For a copy of this catalog, please check No. 6195 on the coupon and drop it in the mail.

No. 6192—Weed Killer

A new service bulletin on the borate weed killer, called by the trade name, Tronabor, has been issued by American Potash & Chemical Corp. in connection with the product's use under asphaltic paving in such cases as airports, highways, parking areas, playgrounds and other similar applications. The new service bulletin augments information on Tronabor contained in a previously-issued bulletin describing its uses in oil fields, along railroad rights-of-way, along fence lines and other farm and industrial applications. The bulletin describes the product as a non-poisonous, non-corrosive borate weed killer that permanently sterilizes soil beneath a paved surface. Copies of either service bulletin can be obtained by checking No. 6192 on the coupon and dropping it in the mail.

No. 6193—Conveyor

A new conveyor, the Over-Track Unloader, is being manufactured by the Midstate Machinery Co. It is being used to unload bulk fertilizer, feed and other materials being shipped in covered hopper cars. Company spokesman said one feature is that no hole has to be dug under the track, thus eliminating any water hazard. Also, this unloader makes



it possible for the operator to spot a car and unload it anywhere he chooses, it is claimed. The photo shows the unit emptying a covered hopper car of rock phosphate. The P51 Unloader is inserted between the railroad tracks and the hoppers of the railroad car and fastened to the car hoppers by means of flexible canvas connections. A dust-tight operation is claimed. The capacity of the P51 is 30 tons per hour of rock phosphate and other materials weighing 90 lb. per cubic foot. Complete information is available by checking No. 6193 on the coupon and mailing it to this newspaper.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted here to help keep retail dealers on rotational circulation informed of new industry products, literature and services.

No. 6188—Fertilizer Applicator, Planter

Working in cooperation with soil and fertilizer experts at Michigan State College, Farmcraft Mfg. Co., Inc., is producing a unit called the Hi-Yield, two-level fertilizer applicator and planter. The new unit places two bands of fertilizer in the ground, one band 8 in. down, the other 4 in. down. Seeds are placed 2 in. to one side of the shallow band and 2 in. below the ground surface.

Unique construction enables the applicator-planter to lay down two different analyses simultaneously, according to the firm, and divided seed hoppers also make interplanting possible. The Hi-Yield will do drill or hill drop planting, by simple interchange of metering plates in the hoppers. In addition, the unit can be adapted to liquid fertilizers, the company states.

Planting and fertilizing speeds up to five miles per hour are claimed with no sacrifice of seed or fertilizer placement accuracy. Extra large fertilizer and seed hoppers are provided.

Two-level fertilizer placement, it is explained, attempts to provide the nutrient for beginning growth (shallow band) while the deeper band can contain an analysis suitable for bringing the plant to maximum size and productivity.

The prototype of the machine was designed at Michigan State College under the direction of a group of soil and fertilizer experts, headed by C. M. Hansen, assistant professor of agricultural engineering, and R. E. Lucas, associate professor of soil science. For more information check No. 6188 and mail the coupon.

No. 5055—Grain Fumigant

A folder describing its grain fumigant, Lethogas, has been prepared by the Parsons Chemical Works. Entitled "Facts and Data on Parsons Lethogas," the folder tells how the product works as a fumigant for grain weevil and certain other insects. The product forms a gas upon exposure to air, destroys by contact and gas fumes and is not a fire hazard, it is claimed. The product is sold in 5-gal., 30-gal. and 55-gal. drums for use in larger structures and in ½-gal., 1-gal. and 5-gal. cans for farm use. Facts about Kilane residual spray, an insecticide spray, are also included in the folder. Methods for the hand use of Lethogas and Kilane to control weevils are outlined. To secure the folder check No. 5055 on the coupon and drop it in the mail.

No. 6189—Liquid Fertilizer Wagons

Prior Products, Inc., has prepared a brochure on its Ranger line of liquid fertilizer farm wagons. The brochure states that "through the use of the Linco level load axles it was possible to design these Ranger wagons with an extra low center of gravity . . . permitting easy access to operating valves and gauges . . . spring cushioning to eliminate shock and twist, important in preventing tank 'seam rupturing.'" There are three applications to choose from in the level load design and one application less the level load feature, but with spring loaded fifth wheel. Secure the brochure by checking No. 6189 on the coupon and mailing it to this newspaper.

No. 6186—Insect Control

A new chemical combination that can be sprayed or dusted on roses to control insects and fungus diseases will be available for rose growers and gardeners for the 1955 gardening season from E. I. du Pont de Nemours & Co., Inc. Called Du Pont rose insecticide and fungicide, it supersedes the firm's rose dust based on the "Massey formula" for control of black spot and other rose diseases. The new material contains a combination of three insecticides

Fertilizer Applicator, Planter

Send me information on the items marked:

- ☐ No. 5044—Batching System
- ☐ No. 5045—Bulletin
- ☐ No. 5055—Fumigant
- ☐ No. 5058—Tractor Shovel
- ☐ No. 5065—Bag Packer
- ☐ No. 6186—Insect Control
- ☐ No. 6187—Leaf Spot Control
- ☐ No. 6188—Applicator
- ☐ No. 6189—Wagons
- ☐ No. 6190—Folder
- ☐ No.6192—Weed Killer
- ☐ No. 6193—Conveyor
- ☐ No. 6195—Anhydrous Catalog

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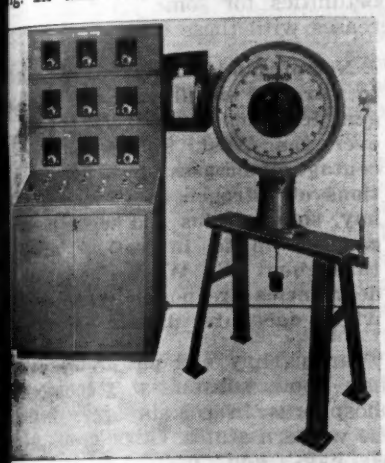
low toxicity mixture, plus the Mas- formula of sulfur and "Fermate" rbam fungicide. The insecticides in- ide methoxychlor which gives res- ual control of most common in- ects, lindane for aphid control and uick insect knock-down, and "Ara- ite" miticide for specific control of d spider mites. Although prepared pecially for the rose grower, it an also be used on most other flow- s and ornamentals. To secure more omplete details check No. 6186 on e coupon and mail it to Croplife.

No. 5044—Batching System

A new electronic batching system s now available for the continuous rocess industries, according to a re- ent announcement by the scale di- ision of the Thurman Machine Co. he system, called the Thurma-tronic lectronic batching system, is adapt- ble to either accumulative or con- ecutive weighing. Controls may be et to weigh one batch or for com- letely automatic continuous batch- g. In addition, controls may also



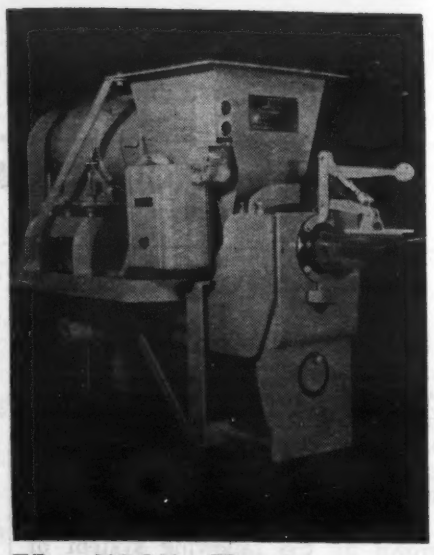
e set to weigh any specific number f batches. Thus, all materials in any rmula can be automatically weighed nd transferred from storage bins to ixers and processing machinery ithout delays, the company claims. ll new or existing plants can be quipped with this batching system, is stated. The system permits a atching cycle to be completed in a atter of seconds, it is claimed by ompany officials. Full details on this atching system and any special ac- essories, such as strip-chart record- rs, one turn dials, etc., may be ob- ained by checking No. 5044 on the oupon and dropping it in the mail.

No. 5058—Tractor Shovel

The Frank G. Hough Co. announces roduction of an improved Payloader ractor-shovel with bucket capacity f 1 cu. yd. payload and ¾ cu. yd. ruck load. Designated as the model HFC, it is a rear-wheel drive model nd features a combination of special ew transmission, plus torque-con- erter drive. The torque-converter of the self-cooled, 3-element type hich automatically multiplies torque utput of the engine in direct pro- ortion to the load requirements. he transmission is of full-reversing ype, giving four speeds forward and our reverse up to 28 mph. To secure ore information check No. 5058 on e coupon and drop it in the mail.

No. 5045—Packaging Bulletin

The Triangle Package Machinery o. announces the availability of a six ge bulletin, "Profitable Solution to our Package Filling Problems." The ulletin describes the firm's line of ec-Tri-Pak net weighing and filling achines and lists the advantages of ing a unit to do many of the pack- ing jobs now done by hand. Six odels, from the automatic, one-scale odel A1C to the three-scale model 3C are described in the bulletin. ples of the bulletin may be ob- ined by checking No. 6045 on the upon and mailing it to this publi- tion.



No. 5065—Bag Packer

A new, smaller bag packer is now available from the H. L. Stoker Co. Extensive tests in commercial operations on this bagger, called the Econo-Speed model 54, have been very satisfactory, company officials said. The packer fills valve or open-mouth bags and drums. It is said to deliver 1 cubic foot in five to 10 seconds, depending on the material handled. Delivered as a complete package, it merely has to be plugged in to the electrical circuit to operate. It is designed to handle practically any powdered or granulated material. For more complete details check No. 5065 on the coupon and drop it in the mail.

No. 6190—Range Fertilizer Folder

Balfour, Guthrie & Co., Ltd., has issued a new folder titled, "A Report to California Ranchers—$16.99 Average Increase in Profit Per Acre," which is available without charge. Case histories of demonstrations on 13 California ranches in nine counties are included in the booklet. The folder states that range fertilization produced "four times more beef per acre, plus 6-8 weeks earlier range readiness." The company's Elephant Brand fertilizer was used in the demonstrations. Secure the folder by checking No. 6190 on the coupon and mailing it to this newspaper.

No. 6187—Cherry Leaf Spot Control

Control of cherry leaf spot with Crag Fruit Fungicide 341 (aglyodin solution) is the subject of a new six-page pamphlet released by Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corp. The pamphlet discusses methods of applying Crag glyodin solution and lists suggested spray schedules, compatibility data, and the costs of using this organic fungicide. Copies of this new pamphlet (Form 8419) and additional information are available by checking No. 6187 on the coupon and mailing it to this newspaper.

NEW WAREHOUSE-OFFICE FACILITIES of Brancucci Bros. Chemical Co., 5400 Monroe St., Denver, cover more than a quarter acre. Erection of the new structure triples warehouse-office space originally occupied by the fertilizer-insecticide firm at 1535 Bassett St., Denver. Further expansion, the building of a $100,000 mixer plant to be added adjacent to, and at extreme right in above picture, is expected to get underway early this spring, according to Jim Brancucci, president.

Denver Firm Completes New Plant, Plans More Expansion

DENVER — "Medicine" was what farmers around Denver dubbed the fertilizer mixture Jim Brancucci peddled from farm to farm back in 1937.

At that time, Mr. Brancucci put his "medicine" for the soil together in an "old sugar batch mixer," delivering it in an ancient, beat-up passenger car, doling out 25-pound batches—aided by an equally ancient funnel—to his farmer customers. Mr. Brancucci was their medicine-man, and they laid cash-on-the-line for his "Green Meadow" brand mix.

This crude equipment, plus mixing headquarters in a small building at 1331 Blake St., Denver, launched the firm of Brancucci & Zarlingo in the fertilizer-insecticide business in 1937. They applied for, and received one of the first fertilizer-insecticide firm licenses in the state of Colorado, License No. 3.

The firm's "old sugar batch mixer" turned out, and the boys sold, 54 tons of their Green Meadow mixture the first year. Insecticide formula ingredients went into a second-hand, 200-lb. capacity "candy-mixer," the partners obtained to prepare their insecticide mixtures for marketing.

In 1946, Mr. Zarlingo left the partnership and the firm sold the Green Meadow brand to the Farmers Union Marketing. Later that same year, Mr. Brancucci convinced two of his brothers, Steve and Dick, of the growing opportunities in the business, and Brancucci Bros. Chemical Co. opened its doors at 1535 Bassett and 124 Wazee Market, in Denver.

Facilities of 1937 were a far cry from Brancucci Bros. recently erected, modern warehouse-office plant covering the greater portion of nearly 6 acres at 5400 Monroe St., in suburban Denver. Here a 7,500-sq.-ft. warehouse, plus 800 sq. ft. of office space, was constructed by the firm at a cost of $81,000.

Plans include an adjacent mixing plant, to add 12,000 sq. ft., to go up in the spring of 1955 at an estimated cost of $100,000.

Constructed of brick and steel, the warehouse-office building has 350 ft. of Rock Island Railway trackage, three truck platforms, one indoor truck pit, three rail loading docks, one one-ton capacity floor scale and sufficient storage for large quantities of insecticides and plant nutrients. Facilities for direct car-to-truck service have been incorporated in the new building.

Many safety factors have been incorporated in the new warehouse. Explosion and fire proof 1,000-watt light fixtures, and natural gas fired forced air heating appliances are individually wired and switched to insure greater safety in warehousing and loading and unloading. Power fed to the new building is 440 volt.

Currently, and until such time as the new mixer building is constructed, all specialty fertilizer mixes are prepared for the firm by Colorado Plant Food Co., at Manzanola, Colo. Brancucci Bros. merchandise Royal Plant Foods and insecticides, Anaconda treble super phosphate and is one of the four Colorado distributors for Geigy insecticides. While the firm of Brancucci & Zarlingo retailed its products direct to the consumer, Brancucci Bros. is now solely a distributor.

Other services offered the firm's customers, are renting of fertilizer broadcasters and aerial crop spraying and dusting. Greeley Aerial Spraying and Dusting, Inc., is a subsidiary of Brancucci Bros. and maintains five airplanes, N3N's equipped with 450 horsepower engines.

"To Better Serve You . . ." captions Brancucci Bros. latest advertising brochure, an advertising piece mailed retailers acquainting them with the company's recent expansion. Other brochures go out at intervals timed at hitting the retailer to restock for pre-season merchandising.

Mr. Brancucci's faith in the future of the fertilizer business is borne out in last year's sales of thousands of tons of plant nutrient mixes, many thousands of pounds of insecticides and hundreds of gallons of emulsions, in contrast with his first year's 54-ton output, laboriously mixed with the "old sugar batch mixer."

More Firms Register For California Sales

SAN FRANCISCO—An additional 27 commercial fertilizer registrants have been licensed to sell agricultural chemicals in California for the fiscal year ending June 30, 1955, according to Allen B. Lemmon, chief of the Bureau of Chemistry of the State Department of Agriculture. The group of 27 has been registered since the original list was completed Sept. 20 and up to the end of December, 1954.

Of the group 23 are located inside California and four are from out of state. Twelve of the 23 are situated in Southern California and the remaining 11 in the northern half of the state.

At the same time the bureau of chemistry announced that 24 more firms were registered to sell agricultural minerals in the state since Sept. 20, effective through the end of the fiscal year.

EFFICIENT FERTILIZER USE

(Continued from page 9)

nutrients to increase yields of certain crops.

At present, there is a large acreage used for small grains, including wheat, barley and oats, that is usually dry-farmed by planting in the fall and winter and where the period of growth normally extends into the dry summers.

These crops have generally been grown by the fallowing system of one year (or more accurately a summer) of cultivated fallow followed by the planted small grains the next year. Recently, in some areas other crops, including legumes, have been planted "on the fallow." Irrigated rice as a summer crop is locally important in California.

In recent years cotton, mostly under irrigation, has become an important crop, especially in Arizona, California and New Mexico. The staple crops — corn, sugar beets, dry beans and peas—are generally irrigated. In many states seed crops and mint, hops and other specialty crops are being produced. Hay and pasture—both irrigated and nonirrigated—are important.

Historically, growers of these field crops have depended largely on the original fertility of the soil. As dry farmed grain yields progressively declined, intervening pasture or fallow for one or more years was used.

The virgin nitrogen supply was augmented by leguminous crops. Under irrigation alfalfa and other legumes in the rotation were generally depended on to maintain the nitrogen supply, and applications of nonnitrogenous fertilizers were added as deemed necessary to keep the legumes in relatively high production.

Carriers of sulfur, phosphorus, potassium, boron and other nutrients have been used at various times and places in this program.

Fertilizer consumption in the West always has remained considerably below that of the other regions. Consumption, however, has been increasing rapidly since the late 1930's, particularly for nitrogen and phosphate.

State consumption of fertilizer depends on the acreage of farmlands within the state and the intensity and type of agriculture practiced. California, with more than 5 million acres of irrigated land, traditionally has been the big user, consuming approximately 59% of all of the fertilizer nutrients in the West in 1950. Idaho, Arizona and Oregon each consumed approximately 9%; Washington, 6%; Colorado, Montana and New Mexico, each 2%; Utah, 1%, and Wyoming and Nevada, each less than 1%.

For the West as a whole, nitrogen consumption is about double that of phosphate. Considerably more nitrogen than phosphate is used in California, Arizona and Oregon; about an equal amount in Utah and Washington.

However, considerably more phosphate than nitrogen is used in Idaho, Montana, Wyoming, Colorado, New Mexico and Nevada. Potash consumption is low and limited largely to California, Oregon, Washington and Arizona.

Highest per acre use of fertilizers is on the high-cash crops, such as cotton, sugar beets, potatoes, fruits and nuts, vegetables, rice and seed and specialty crops (table 2). Grains, hay and dry beans and peas receive the least.

The pattern of nutrient consumption as mixed fertilizers and as straight materials in the West differs considerably from the other regions. Only about 25% of the total consumption of nutrients is in the form of mixtures, as compared with 75% in the other states.

No blanket statements relating responses to rates of application of a fertilizer may be made that will be applicable to all lands in a given crop on a regional basis. Local areas within the region have possibilities of substantial increases from the use of appropriate fertilizers on field crops.

In general, the nutrient needs of the high-costs-per-acre vegetable, fruit and nut crops are being adequately met, or nearly so, though in some areas there are undoubted opportunities for some substantial increases with these crops.

Not all nonlegume crops respond to nitrogen on all soils, but nitrogen deficiencies are very general over the West. Substantial percentage increases from applications of nitrogen on corn, cotton, hay, small grains and sugar beets can be made in various areas throughout the West. Phosphorus deficiencies are not universal, but, where encountered, may be acute.

Various hay and pasture legumes may show substantial response to phosphorus in certain areas within the western states. Other crops such as hay- and pasture-nonlegumes, vegetables, potatoes and cotton may need adequate nitrogen before these crops will give maximum responses to phosphate applications.

Potash-deficient areas are infrequently found, but when encountered may be as serious for many crops as any other nutrient deficiency.

Wyoming Researcher Reports Results of Heavy 2,4-D Use

LARAMIE, WYO. — Use of heavy rates of 2,4-D acid may be one answer to killing old stands of broad-leaved perennial weeds in one chemical treatment without costly side effects, according to the University of Wyoming.

The new treatment will eliminate old stands after one spraying as compared to many years of spraying at lighter rates, and the one-shot treatment is economical, the college states.

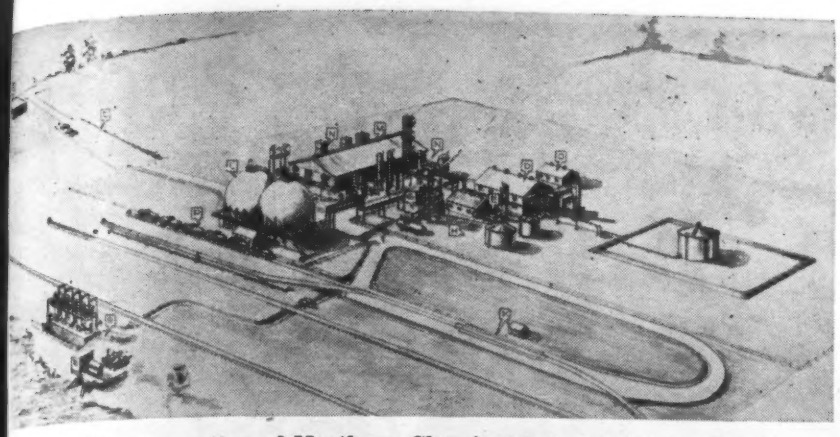
The one-time treatment does not permanently sterilize the soil as do many other chemicals—crops can be planted three months after using a heavy application of 2,4-D. Grass stands are not damaged.

The method could be used to kill out completely small patches of noxious weeds in cropland before the weeds had spread all over a field. The small areas treated would be out of production only three months.

Report of the new treatment comes from Dale Bohmont, agronomist at the Wyoming College of Agriculture.

Mr. Bohmont says research shows that one treatment of 40 lb. of 2,4-D acid an acre will control 97% of the Canada thistle and 86% of the Russian knapweed. Eighty pounds an acre will give complete control.

The heavier rates are 20 to 8 times the amount normally recommended for selective control. Mr. Bohmont feels, however, the better control from heavier rates make them worth consideration under some conditions.



Artist's Conception of Northern Chemical Industries' New Plant

NORTHERN CHEMICAL INDUSTRIES

(Continued from page 1)

fices in New York City, Boston and Chicago. These funds are being provided through the sale of first mortgage bonds, subordinated debentures and common stock. The first mortgage bonds are being sold to the New England Mutual Life Insurance Co., First National Bank of Boston and Guaranty Trust Company of New York. The subordinated debentures and common stock were offered publicly by White, Weld & Company.

Northern Chemical Industries was founded in 1943 as an affiliate of the Summers Fertilizer Co., Inc., Baltimore, manufacturer of mixed fertilizers, which operates nine plants in New Brunswick, Maine, Pennsylvania, Maryland, North and South Dakota. N.C.I. will enjoy, through Summers, a captive requirement of nitrogen representing 48% of the plant's rated capacity, the firm states.

N.C.I. recently elected three new directors to its board, two of whom are well known New England industrialists—C. M. Hutchins, president of the Bangor & Aroostook Railroad and former president of the New England Council and James T. Baldwin, treasurer of C. H. Sprague & Son Co., Boston. The third, A. F. C. Van den Bergh, director general of Diamond Fertilizer & Chemical Co. of London, England, a long time associate of Mr. Totman's various interests, will act as the company's foreign representative.

Other officers of the company are F. L. Litty, vice president & general manager of the Searsport works; R. E. Fraser, Baltimore, vice president; Dr. C. L. Carpenter, vice president in charge of development, formerly connected with W. R. Grace Co., Colgate-Palmolive Co. and Standard Oil Co.; J. C. Totman, Bangor, vice president in charge of sales; N. K. Totman, Baltimore, treasurer; W. A. Fessler, Baltimore, secretary. Frank P. Preti, attorney of Portland, Maine, is the corporation's clerk and assistant secretary.

The plant will be the first using exclusively the Texaco-Hydrocarbon Research process for producing ammonia synthesis gas from Bunker "C" fuel oil by partial oxidation with oxygen, according to the firm. This latter process is in use by several interior plants utilizing natural gas. Since the latter is economically unavailable for Searsport, Bunker "C" fuel oil will be utilized as the prime source of hydrogen and power.

Thus far, Mr. Totman said, the use of anhydrous ammonia for direct application to the soil has not been practiced in New England as in other parts of the country, because the topography of the area does not lend itself as well to this particular use as do the Midwestern plains. However, with ammonia readily available from the Searsport plant, it is believed that farmers in the area to be served will materially increase their nitrogen consumption via the various derivatives such at nitrogen solutions and sulfate of ammonia, he said.

NEW PROCESS

(Continued from page 1)

"DAP" is said to be free-flowing, suitable for usual methods of application.

Because of its geographical location in Colorado, the company plans to market its products throughout the entire western half of the U.S.

The firm is the first major coke oven operator to make a move of this kind. Although it has been known for years that such a product could be made, the unavailability of the proper grade of phosphoric acid heretofore has eliminated such consideration, according to CF & I.

Technical collaboration with Monsanto Chemical Co. and with Koppers Company, Inc. aided materially in bringing about the successful production of this new product, Mr. Stuart said.

Growers Turn Down Tobacco Market Quotas

WASHINGTON — Final results of grower referenda held Dec. 17 for Maryland tobacco and Pennsylvania cigar-filler (Type 41) tobacco, were announced recently by the U.S. Department of Agriculture. The official compilation of the vote in the referenda does not change the results—which were against marketing quotas—as indicated by preliminary returns announced by the department Dec. 21, 1954.

Even though marketing quotas will not be in effect this year, USDA officials point out that compliance with acreage allotments will be a condition for eligibility to receive assistance under the Agricultural Conservation Program.

C. B. Shuman Is New Head of Farm Bureau

NEW YORK—Charles B. Shuman, Sullivan, Ill., was unanimously elected president of the American Farm Bureau Federation at the organization's 36th annual meeting in the Hotel New Yorker.

He succeeds Allan B. Kline, Vinton, Iowa, as head of the AFBF which has a membership of more than 1,609,000 farm families in the 48 states and Puerto Rico. Mr. Kline announced he was resigning because of ill health with one year still to be served on a two-year term.

A grain and livestock farmer from central Illinois, Mr. Shuman served 9 years as president of the Illinois Agricultural Assn. The IAA is the largest statewide Farm Bureau group in the nation, with a membership of more than 201,000 farm families.

He farms about 200 acres and supervises the operation of tenants on about 550 acres in addition. He has a commercial Angus herd. In 1928, he was graduated with honors from the University of Illinois College of Agriculture and in 1929 earned his master's degree in agronomy there, with a minor study in agricultural economics.

GRACE PLANT DEDICATION

(Continued from page 8)

A tour of the plant was made during the afternoon, with company engineers serving as guides.

A reception and dinner were held at the Memphis Country Club in the evening to celebrate the dedication of the plant. Tennessee's Senator Estes Kefauver was scheduled to present the address of the evening, but was unable to attend because of mechanical difficulties on his plane from Washington, D.C. Toastmaster of the evening was Col. Roane Waring, president of the Memphis Chamber of Commerce.

Charles E. Wilson, in his remarks at the banquet, lauded the advancements made in scientific agriculture during recent years. In looking back over the past few decades of tremendous progress in agriculture, he said, "it is apparent that a great part of these magnificent results can be traced directly to scientific research and the development of new technologies in all phases of agricultural practice."

He pointed out how our population is now 164 million as compared to 132 million in 1940 . . . an increase of 24%; and that by 1975, some 220 million people may live in these United States.

"This healthy increase in our population means ever greater demands for products and an ever increasing need for higher standards of service. Most of all, it means prosperity if we will meet the challenge of the expansion that lies ahead with aggressiveness and vision. . ."

Mr. Wilson indicated that our efforts to beat off the "mad beast type of enemy and philosophy loose in the world may be a blessing in disguise when viewed in the light of history's events of the next decade."

"We have in this nation a physical force which is almost untapped . . . and none can measure the great untapped strength of our spiritual power," he concluded.

Ammonium Nitrate, Anhydrous Output Rises

WASHINGTON — Production of ammonium nitrate, original solution (100% NH_4NO_3) during November totaled 179,207 short tons, up 10% from the October output of 163,234 tons, according to preliminary figures released recently by the Bureau of Census, U.S. Department of Commerce.

The production of synthetic anhydrous ammonia during November was 238,463 tons, an increase of 4% over the October production of 230,098 tons.

V-C Plant Fire

LOUISVILLE — A smoldering fire broke out Jan. 6 in the Virginia-Carolina Chemical Co. plant here. The fire was confined to a storage room, sealed off from the rest of the plant.

WORLD REPORT

Industry News from Everywhere

By GEORGE E. SWARBRECK
Croplife Foreign Office Manager

Agriculture faces a revolution because of new developments in the field of nuclear energy, according to Admiral Lewis L. Strauss, chairman of the U.S. Atomic Energy Commission.

Disease resistant strains of plants and new ways of fighting plant diseases will be available, he states. A rust resistant strain of oats has been developed and one irradiation of tomato seedlings produces at least one generation of wilt resistant plants.

Additionally, Admiral Strauss states, developments in the atomic energy field are being used for insect control and for fertilization.

New Name

Fisons, Ltd., the British fertilizer group, announces that effective immediately Pest Control, Ltd., the insecticide firm over which it acquired control in 1954, will be known as Fisons Pest Control Ltd. The firm will continue to trade independently from the parent company.

U.S. Firm in Canada

Trade reports state that Columbia Southern Chemical Corp. is negotiating the purchase of a substantial interest in the Standard Chemical Co. of Toronto.

Standard Chemical operates as a division of the Dominion Tar & Chemical Co., Ltd., the latter company having purchased the Standard Chemical assets for $5,850,000 in 1951. In addition to other chemical lines Standard is interested in the insecticide business. Assets include seven plants and eight warehouses.

Locust Plague

A plague of locusts has entered Morocco with damage experienced being the most extensive since 1867. Total cost of the ruined crops has been estimated at more than $5.5 million, with some sources suggesting that the figure is understated.

Insecticide is being sprayed in an attempt to beat the locusts. The airstrip at the U.S. air force base of Ben Guerir was completely covered in the early stages of the attack and had to be cleared with flame throwers. Since then the plague has worsened and is now attacking the fertile northern agricultural land.

Damage from locusts is also reported from the Orange Free State in South Africa.

European Progress

The Organization for European Economic Cooperation, formed in association with one of the earlier American aid programs, reports that the production of nitrogenous fertilizer in Europe in 1951-52 was 2,050,000 tons increasing to 2,180,000 tons in the following year. When final reports are in it is expected that 1953-54 figures will show an increase of 9% over the previous year.

International trade, OEEC stated, is not increasing at the same rate as production. Increasing competition from new producers, particularly in North America, is being felt in markets outside Europe.

The report stated that the necessity for the relaxation of quantitative restrictions and customs barriers and the freer flow of chemicals between countries in membership of OEEC is underlined by this North American advance.

Entomological Service

The British Commonwealth Institute of Biological Control reports that it is establishing additional substations in India and Pakistan. Plans are being made with a view to establishing a station in East Africa.

Korean Grain

Grain shipped to Korea under U.S. auspices as part of relief measures is reported to be affected by weevil.

The U.S. Korean Civil Assistance Command is spraying the grain with methyl bromide gas, and already 80,000 tons have been treated. Work is proceeding on the balance of 320,000 tons.

Japan Gets Orders

Japan's share of business from the $700 million economic aid agreement recently signed between the U.S. and the Republic of Korea is estimated at $60 million by Tokyo sources. The agreement, it is understood, allows for the purchase of relief goods from Japan when the Japanese manufacturers can produce the goods at a price lower than anyone else. Observers suggest that in view of low prevailing wage rates, there should be little difficulty about this angle of the deal.

Among the items Japan is expected to supply is fertilizer (Croplife, Dec. 20, page 18).

Committee to Study Cacao Production

NEW YORK—The chief mission of an Association of Cocoa & Chocolate Manufacturers of the U.S. committee during its proposed visit to the principal cacao producing countries of West Africa will be to persuade local governments to encourage new plantings and to step up disease control procedures. This was announced here Jan. 6 by Clive C. Day, president of the association.

The committee will visit the Gold Coast, Ivory Coast, Nigeria and the Cameroons sometime this month.

The Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica, is receiving a grant from the association through American Cocoa Research Institute for the purpose of finding means for stimulating production of cacao. The association is also working in close cooperation with Foreign Operations Administration, which has made several grants to Western Hemisphere countries in this connection.

The committee's visit to West Africa is a result of concern over the soaring prices which has cut down U.S. consumption of cocoa. Higher production, it is believed, will bring about lower costs.

FARM PRODUCT SALES

DETROIT—Sales in farm products in the surrounding Wayne County area during the second quarter period of 1954 showed an increase of 0.8% over sales in the same period a year ago, according to figures compiled by the Detroit News.

AT NORTH DAKOTA FERTILIZER SCHOOL—(left to right): Carl Erickson, Armour & Company, Fertilizer Division; Richard Ruud, Peavey Elevator Company, Fertilizer Division; Dr. E. B. Norum, Professor of Soils, North Dakota Agricultural College (seated); L. M. Bond, Anaconda Copper Mining Company; Dave Williams, Manager Peavey Elevator Company Fertilizer Plant, Fargo. Lower photo, (left to right): Dr. W. P. Martin, Chief Department of Soils, University of Minnesota, St. Paul, who discussed soil conditioners on the program; Dr. M. H. McVikar, chief agronomist of the National Fertilizer Assn., discussed the fertilizer supply and outlook for 1955, and Virgil L. Weiser, soils agent of North Dakota Agricultural College Extension Service, outlined fertilizer recommendations for 1955 as being released by the college. For a story of the conference see page 1 of the Dec. 13 issue of Croplife.

300 Attend Field Day Sponsored By Ohio Company

MARION, OHIO—More than 300 growers from northcentral Ohio counties attended the fall field day sponsored by the "Na-Churs" Plant Food Co. of Marion, Ohio, manufacturers of "Na-Churs" Liquid Fertilizer. Activities included motor caravan visits to four farms in Delaware and Franklin counties where tests on corn have been under way this season under the direction of Dr. V. A. Tiedjens, director of research for the company.

B. Peterson, president of the company, said the field day was arranged for three reasons: To enable growers and other interested persons to observe the results of spray application of liquid fertilizer to field crops; To show results of field tests conducted under scientific supervision of the company's new 10-20-10 formula, which was announced for the first time at the field day, and to show results of the first extensive tests the company has made in applying liquid fertilizer in the rows while corn is being planted. The planter shoe equipment used was on display.

The group stopped at the Robert Timms farm near Radnor, Ohio, the Johnson & Price farm near Delaware, Ohio, the Dick Dawson farm near Delaware and the Wilbur Franklin farm near Gahanna, Ohio.

Airplane equipment used for foliage spraying was shown, with three aerial spray companies being represented. Also shown was a ground sprayer and the new equipment for applying liquid fertilizer with a corn planter.

Taking part in the program at the various farms were the owners and operators of the farms and representatives of the company, including Thayer Martin, vice president; Dr. Tiedjens; Ralph Humes of Stanford and Harold Limbach of Westerville, both district representatives.

AT FIELD DAY—Thayer Martin, vice president of "Na-Churs" Plant Food Co., Marion, Ohio, is shown above talking to a group at the firm's fall field day.

NEW ALFALFA

DAVIS, CAL.—The California and Nevada experiment stations are jointly releasing a new alfalfa variety called Lahontan. It is reported to be resistant to stem nematode and bacterial wilt.

Supply of Fertilizer Materials Ample, Texas Group Told

COLLEGE STATION, TEXAS — About the only shortage for growers to be worried about this year is a shortage of time next spring, about 150 persons attending the Texas Fertilizer Conference at Texas A & M College Jan. 6-7 were told.

C. D. Shallenberger, president of the Shreveport Fertilizer Works, commented that the situation now is different than that of recent years.

"I don't think anybody needs to worry about superphosphate this year. We've got plenty," he said. "The same thing goes for multiplesuperphosphate."

Jerry Wakefield of the Olin-Mathieson Chemical Corp., told the group that "time is the item that will be short next spring. We don't foresee a shortage of anything."

Dr. J. Fielding Reed of the American Potash Institute said that "delivery problems are the only things worrying us. We have a sufficient supply of domestic potash to meet our demands."

Dr. R. D. Lewis, director of the Texas Agricultural Experiment Station, welcomed the group to the campus and told members that "we have seen a 65% increase of efficiency in the past 14 years. In 1941 a farmer fed himself and 10 other people. In 1954 he fed himself and 17 other people."

He also predicted that coming years would show:

Further decline of actual number of folks on farms and ranches; Average size of farms will probably increase even further; Further increases in volume of output from farms; Conversion of some lands to grass and grazing; Greater intensification and concentration in some crops—particularly cotton; Capital investment per worker (farm) in some areas is $50,000 to $60,000 and still going up; Further increases in mechanization; No decrease in price spread between producer and consumer (there will be more and more demands for services in between); More competition from off-the-farm products; No diminishing of the war between man and insect; More emphasis on prevention instead of cure in crop problems; Some reduction in loss and waste—which now comes to $13-$15 billion annually; Further broadening of our concepts of conservation—other things besides soil and water; Water will continue to command strong attention as a basic resource.

Russell Coleman, president of the National Fertilizer Assn., Washington, D.C., showed trends in use of mixed fertilizers across the nation, by means of charts and graphs.

A. G. Caldwell of the college's Agronomy Department described methods used in determining responses to fertilization, and R. J. Hildreth of the Department of Agricultural Economics and Sociology gave the group an economic interpretation of these responses, using Coastal Bermuda as a yardstick.

Marvin H. Ferguson of the U.S. Golf Assn. and E. C. Holt of the Agronomy Department described their turf fertilization work, and R. . Cheaney, also of the Agronomy Department, described pasture forage responses to phosphate fertilization at the Beaumont Station of the Texas Agricultural Experiment Station.

E. R. Lemon, U.S. Department of Agriculture Agricultural Research Service, assigned to the college, told the group that nutrient uptake by plants depends on respiration conditions in the soil.

"It's the same with a plant as with you," he said. "You have to be able to breathe in order to live. Proper respiration of plants depends on oxygen, temperature and moisture. Without these in the proper amounts the plant dies."

George Kunz, soil physics section of the Agronomy Department, told the group that plants require 15 elements in order to live. Of these, hydrogen, oxygen, nitrogen and carbon come from the air. The other 11 come from the inorganic portion of the soil if they are present. If not, they must be supplied.

F. L. Fisher, agronomy, and Carl Hoveland, Texas Agricultural Experiment Station, spoke on Iron Chlorosis (deficiency symptons). Mr. Fisher used sorghums for illustration, while Mr. Hoveland used ornamental shrubs.

M. K. Thornton, soil testing laboratory, described techniques and problems of his office in obtaining good soil samples and in prescribing fertilizer applications based on these samplings.

Minnesota Spraying Short Course Planned

ST. PAUL—A short course in aircraft and ground spraying for weed and insect control will be held on the University of Minnesota's St. Paul campus, Jan. 24-25. Announcement comes from J. O. Christianson, director of short courses. T. L. Aamodt, state entomologist, is course chairman.

The Jan. 25 program opens with a discussion of Minnesota 1954 aerial and ground spraying statistics by J. R. Sandve of the state entomologist's staff. Sig Bjerken, state weed control supervisor, will speak on weed control laws and others will discuss how proper storage improves insecticides' and herbicides' efficiency.

Afternoon program includes talks on calibration and care of sprayers, advantages of ground spraying equipment in insect control, residential spraying — including insect control and lawn weed control—and laws about aerial and ground spraying.

The morning of Jan. 25 R. S. Dunham, University professor of agronomy, will speak on 1955 weed control recommendations; J. W. Butcher, assistant state entomologist, will speak on 1954 insect surveys and 1955 predictions, and L. K. Cutkomp, associate professor of entomology, will speak on 1955 insect control recommendations.

The afternoon's program includes talks on brush control with herbicides, atircraft brush control, brush control in forest management and Joliar fertilizer application. J. W. Butcher will lead a panel on the 1954 control programs. The panel will include members of the state entomologist's staff, the chemical industry, and two county agents — Bill Olson, Breckenridge, Wilkin County, and Nick Weyrens, Fergus Falls, West Otter Tail County—who were active in stemming the 1954 armyworm attack in northwestern Minnesota.

Soil Test Record

MANHATTAN, KANSAS — Thirteen Kansas counties tested more than 800 soil samples each during the past year, according to a report issued by Robert Bohannon, extension specialist at Kansas State College. The total for the year, 31,612, is the highest on record. There now are 58 county soil testing laboratories, all under supervision of county extension agents, and state laboratories at Kansas State College in Manhattan and at the Garden City branch experiment station. Johnson was the leading county, with 1,091 tests.

NORTHEAST WEED MEETING

(Continued from page 1)

2,4-D for Weed Control in Forage Legumes." R. H. Beatty, American Chemical Paint Co., Ambler, Pa., awards committee chairman, made the presentation.

(See page 1 of the Jan. 10 issue of Croplife for a report of the Jan. 5 session.)

Coordinating committee reports, setting forth preliminary recommendations and indicating problems needing more work in various phases of weed control, were discussed during the Jan. 6 and 7 sessions on horticultural and agronomic crops, potatoes, forestry and industrial weed and brush control, aquatic plants and public health.

The reports were summaries of results of research work in the Northeast and several chemicals were evaluated for use as weed controls in specific crops or situations. Recommendations were made for extensive use, for trial use or only experimental use, with time and method of application.

Chemicals recommended for extensive use as weed controls in several specific crops included $NH_4DNOSBP$ (alkanolamine salts of dinitro ortho secondary butyl phenol), CIPC (isopropyl - N - (3 - chloro - phenyl) carbamate), SES (2,4-dichlorophenoxyethyl sulfate), MCP (2,methyl 4-chlorophenoxyacetic acid), DNOSBP (dinitro ortho secondary butyl phenol) and the alkanolamine salts and ester forms of 2,4-D separately and in combination with 2,4,5-T.

Some chemicals, such as CMU (3-(p-chlorophenyl), 1, 1-dimethylurea), were recommended for extensive use as weed controls in a limited number of specific crops; however, they were recommended for trial use or experimental use only in many instances. Other materials which fell in this category were Alanap-1 and -2 (N-1 and N-2 naphthyl phthalamic acid), Dalapon (sodium salt of 2,2-dichloropropionic acid), Ammate (ammonium sulfamate), Amizol (3-amino-1,2,4-triazole), TCA salts (trichloroacetic acid), Sesin (2,4 - dichlorophenoxyethyl benzoate) and Natrin (2,4,5 trichlorophenoxyethyl sulfate).

The absence of recommended chemicals for extensive use as a weed control in several crops and for certain weeds was noted. The crops for which no extensive use recommendations were made included carnations, winter cereals (seeded), cole crops, ornamental herbaceous annuals, peppers, sweet potatoes, spinach, tomatoes and turnips. Extensive use recommendations were lacking for control of bedstraw (Galium mollugo), Bermuda grass (Cynodon dactylon) and bindweed (Convolvulus spp.), quackgrass (Agropyron repens) and general weeds in orchards. Recommendations were made for these plants on a trial or experimental basis.

According to the coordinating committee reports, there are many problems still needing more work. Among them were finding pre-emergence herbicides for weed control in carrots, parsnips, parsley, dill, sweet corn, legumes and turf and herbicides for use after transplanting celery, cole crops and lettuce.

More selective herbicides were called for in tomatoes, peppers and vegetable vine crops and on certain grasses and broadleaved weeds. Control for poplars, a weed killer less injurious to alfalfa and post-emergence herbicides for bindweed and cocklebur were also designated as problems.

Equipment problems included finding suitable distribution equipment for granular materials, how to clean spraying equipment following use of CMU and, in general, designing better equipment for application of chemicals.

A definite need for continued evaluation of both new and more common chemicals for use in weed control was indicated in many of the coordinating committee reports. Combination of chemicals for control of all weeds was suggested, as was developing new materials, including a more residual and "fool-proof" pre-emergence spray.

L. L. Danielson was chairman of the research coordinating committee which was responsible for preparation of the reports. The complete report will appear in final form in the supplement to the conference's proceedings, according to Mr. Danielson.

Committee members presenting the reports were:

W. H. Lachman, University of Massachusetts, Amherst, carrot family, cole, salad and green crops; E. M. Rahn, University of Delaware, Newark, tomatoes, peppers, asparagus and sweet corn; Stewart Dallyn, Long Island Vegetable Research Farm, Riverhead, N.Y., vegetable legume and bulb crops; A. W. Feldman, Naugatuck Chemical Division of United States Rubber Co., Naugatuck, Conn., vegetable vine crops; M. F. Trevett, Maine Agricultural Experiment Station, Orono, Irish potatoes, beets, turnips and rutabagas; R. F. Carlson, Michigan State College, East Lansing, strawberries; John S. Bailey, Massachusetts Cranberry Experiment Station, East Wareham, cane fruits and blueberries; Frank N. Hewetson, Pennsylvania State University Fruit Research Laboratory, Arendtsville, orchards; and Paul W. Santelmann, University of Maryland, College Park, field corn and soybeans.

Collins Veatch, West Virginia University, Morgantown, small grains; M. A. Sprague, New Jersey Agricultural Experiment Station, New Brunswick, pasture and hay crops; Ralph E. Engel, Rutgers University, New Brunswick, turf; John D. Gould, New York State Conservation Department, Poughkeepsie, aquatic weed control; A. H. Fletcher, New Jersey Department of Health, Trenton, public health; and J. Antognini, Geigy Agricultural Chemicals Division of Geigy Chemical Corp., New York, herbaceous perennial and biennial weeds; Arthur Bing, USDA Ornamentals Research Laboratory, Farmingdale, N.Y., ornamentals; and Linton E. Cowart, Grasselli Chemical Department, E. I. du Pont de Nemours & Co., Wilmington, Del., soil sterilization.

E. D. Markwardt, Cornell University, Ithaca, N.Y., was also a member of the research coordinating committee and discussed application equipment at the Jan. 5 extension session.

Thirty-three research and progress reports were presented at the Jan. 6 and 7 sessions on horticultural crops, including potatoes. Twelve reports were delivered on Thursday morning, Jan. 6, and were concerned primarily with weed control in sweet corn, tomatoes, asparagus and certain other vegetable crops. Herbicide studies with onions, squash, beans and tomatoes were covered in 10 papers given in the afternoon. Five papers were presented on Friday morning and involved weed control work in ornamentals, vineyards, raspberries and strawberries.

The remaining six papers dealing with horticultural crops were discussed at a separate concurrent session on potatoes on Friday morning.

Granular applications of herbicides were as effective as sprays using the same amounts of basic chemicals in pre-emergence treatments, according to L. L. Danielson, who discussed comparison of granular and spray applications of herbicides on strawberries, tomatoes, peppers, sweet potatoes and ryegrass. Chemicals tested included CIPC, Sesin, Crag Herbicide No. 1, Dalapon and CMU.

A combination of CIPC (1 lb. per acre) and Sesin (2 lb. per acre) applied in granular forms immediately after planting Pocahontas strawberries in the fall was found to be very effective in killing chickweed and henbit. Two applications per winter were said to be required to control winter and spring weeds. Granular carriers such as Attaclay, vermiculite and tobacco pulp were reported equally effective within similar particle size range.

In work done by Stewart Dallyn and others on effects of soil organic matter on herbicides used in vegetable production, it was found that the effect of organic matter, per se, was the most important factor involved and overshadowed most of the treatment - organic matter interactions.

The experiment involved "small seeded" crops (onions, spinach and beets) treated day after planting with graduated rates of CMU, PDU, and CIPC. Actual effect of organic matter on "large seeded" crops (lima beans and sweet corn) treated with varying rates of CMU, PDU, Telvar, NaPCP, DN and 2,4-D was much less pronounced and treatment effects more apparent.

Dalapon and Natrin at weed killing rates were toxic to young tomato transplants, it was concluded by Mr. Danielson and M. H. Schumacher in experiments conducted at the Virginia Truck Experiment Station.

Tomato and pepper plants were quite tolerant of Natrin at lay-by time, and Dalapon was extremely toxic to tomato, pepper and sweet potato plants at lay-by time, they said.

Test results also indicated more than 4 lb. Dalapon per acre is required as pre-emergence treatment in controlling annual grass in sandy clay loam, and that Alanap-2 was not injurious to sweet potatoes at 4 lb. per acre at lay-by time.

Weed control in sweet corn was discussed in papers by S. K. Ries and B. H. Grigsby, Michigan State College, East Lansing and W. H. Lachman.

In Michigan experiments it was shown CMU (DW) provides no better weed control in sweet corn than the more soluble (W) form. The best

CONFERENCE OFFICERS—Pictured at the top above are Northeastern Weed Control Conference officers for 1955-56. Left to right are R. J. Aldrich, Field Crops Research Branch of U.S.D.A. and N.J. Agricultural Experiment Station, New Brunswick, reelected secretary; J. D. Van Geluwe, G.L.F. Soil Building Service, Ithaca, N.Y., elected president; L. L. Danielson, Virginia Truck Experiment Station, Norfolk, elected vice president; and D. A. Schallock, Rutgers University, New Brunswick, reelected treasurer. Election of all officers was unanimous. Mr. Van Geluwe is shown at the left in the center photo being congratulated by A. O. Kuhn, University of Maryland, College Park, retiring 1954-55 conference president. Below, Marvin M. Schreiber, Cornell University, Ithaca, N.Y., left, is shown being presented with the award for the best paper delivered at the conference. R. H. Beatty, chairman of the awards committee, is making the presentation. Mr. Schreiber's paper was entitled "A Comparison of MCP and 2,4-D for Weed Control in Forage Legumes." The award consisted of $100 and a certificate of merit.

Weed Society Scheduled First Meeting

NEW YORK—The charter meeting of the Weed Society of America will be held here next Jan. 4-6, it was announced at the ninth annual meeting of the Northeastern Weed Control Conference. R. H. Beatty, American Chemical Paint Co., Ambler, Pa., is slated to be president of the new society.

The first two days will be devoted to national proceedings, and the final day will be designated "Northeastern Weed Control Conference Day." The northeastern section will be hosts.

It was also announced that there will not be any oral presentation of papers at the Northeastern Weed Control Conference sessions. Reports will be published in the proceedings.

Chemical firms having new chemicals which show promise for use in weed control were asked to send information to the Northeastern Weed Control Conference secretary for publication in the newsletter, which is prepared twice a year.

K. P. Buchholtz, University of Wisconsin, Madison, was announced as the new editor of Weeds.

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time for DNBP applications was in the "spike" stage, it was stated.

General observations during experiments conducted in Massachusetts indicated pre-emergence application of trichlorobenzoic acid (TCB) at 1 lb. per acre would provide an ideal hormone-type herbicide for corn. Other materials which displayed effective weed-killing properties and fairly wide margin of safety in regard to dosage included NaPCP, Karmex W and DW, DN, Kuron, Dow Formula 40 and Esteron 10-10.

H. Sweet and E. R. Marshall, G.L.F. Soil Building Service, Ithaca, N.Y., in their paper on post-setting and lay-by applications of herbicides to canning tomatoes in western New York, suggested large scale growers' trials be conducted comparing Natrin, 7977 and Methin for selective weed control at lay-by in tomatoes. Results with materials have been satisfactory insofar as weed and grass control and lack of injury to tomatoes are concerned.

The responses of tomatoes to Natrin and derivatives as affected by time of application and irrigation were investigated by R. M. Menges and R. J. Aldrich of Rutgers University and USDA Field Crops Research Branch respectively. They determined Natrin and 7977 at 2½ and 5 lb. per acre would effectively control broadleaf and grass weeds.

Irrigation levels did not affect weed control, it was reported, and yields obtained from early chemical applications were somewhat lower than those of late applications. The 5 lb. rate of Natrin appeared to increase materially percentage of discard fruit.

Based on a compilation prepared by R. J. Zedler, Carbide & Carbon Chemicals Co., New York, covering results of experiments throughout U.S. and Canada on use of Natrin, it was suggested that Natrin can be used to successfully control weeds in tomatoes at rates of 2 to 4 lb. an acre with a wider margin of safety if the material is applied after tomato plants become established rather than immediately after transplanting. The higher rates, it was stated, should be used on the heavier soil types.

S. K. Ries of Michigan State College and J. H. Davidson, Dow Chemical Co., Midland, Mich., presented a preliminary report on the control of quackgrass and annual weeds in Michigan asparagus plantings.

They reported control of quackgrass in asparagus was obtained from Dalapon sodium salt at concentrations ranging from 7 to 15 lb. acid equivalent per acre; however, it was felt that repeat applications would be necessary for complete eradication. Recommendations based on the results of experiments are being withheld until more information on yield, soil type and residue information is obtained, they said.

Combinations of Dalapon at the 15 lb. acid equivalent rate with CMU or Silvex were said to have given excellent all season control of both annual weeds and quackgrass. Dalapon-Silvex combination applied as a post-emergence spray may be somewhat injurious to asparagus, it was noted.

Detectible flavor differences were found between Karmex-W treated and untreated (frozen) asparagus on two of eight harvest dates in experiments conducted by J. H. Ellison, W. A. Maclinn and R. J. Aldrich at the New Jersey Agricultural Experiment Station, New Brunswick. No difference in flavor could be detected between treated and untreated canned asparagus at any of six harvest dates in another test. Karmex-W was applied at two lb. per acre.

Papers on some effects of chemicals and their time of application on sweet corn and weeds and selective herbicides for tomatoes were also included on the program for the Jan. 6 horticultural crops morning session. Authors of the paper on sweet corn were Cornell workers Garvin Crabtree, R. D. Sweet and Chauncey Benedict. Mr. Crabtree and Mr. Sweet, with Leonard Feddema of Cornell, presented the paper on tomatoes.

A further report of the Conference will appear in the Jan. 24 issue of Croplife.

Canada Cooperatives Reported Ready to Enter Fertilizer Field

TORONTO—Cooperative organizations in western Canada are planning to enter the fertilizer field, according to George Urwin, president of Saskatchewan Federated Cooperatives, Ltd.

Mr. Urwin revealed that a large New York firm with good financial backing plans to erect a fertilizer plant in western Canada, and that there was a good prospect that Inter-Provincial Cooperatives, Ltd., a group associated with Federated Cooperatives, will act as distributor.

Trade circles in Winnipeg consider that the plant will locate in one of the oil and gas producing centers in the west in order to take advantage of the availability of by-products useful in the manufacture of fertilizer.

George Fast, general manager of Inter-Provincial, described Mr. Urwin's statement as premature and he added that nothing definite has been fixed.

Carl H. Hartman Retires from St. Regis

NEW YORK—St. Regis Paper Co. has announced the retirement of Carl H. Hartman, vice president in charge of multiwall bag development. He will serve the company in a consulting capacity.

Mr. Hartman joined the Valve Bag Co., which later became part of St. Regis, in January, 1910. He served in a number of executive capacities and was director, vice president and general manager of that company when it was acquired by St. Regis in 1929. In 1945, he was named vice president of St. Regis Sales Corp., sales subsidiary of St. Regis Paper Co., and became vice president of the parent company in April, 1951.

During World War II, Mr. Hartman served with various U.S. Government advisory committees.

GRAIN SANITATION

(Continued from page 1)

to the impact of the FDA drive against contaminated or weevil infested wheat as to volume.

FDA officials have told croplife that as much as 4% of the wheat crop would fall into the FDA enforcement mesh. This in an ordinary wheat crop year could amount to as much as 40 million bushels of this food grain which would have to be sold for feed use if found by FDA to be below its food standards.

In terms of dollars and cents this would mean an economic penalty to the farmers of better than 40 million dollars. Now it is up to FDA to speed up any requests from the pesticide industry to make available and set tolerance levels for residual pesticides for grain storage points.

Farm Income Down In Southern States

ATLANTA—Farm income in seven Dixie states dropped 9.5% in the last 10 months as compared with the same period in 1953.

The drouth-plagued states are Alabama, Florida, Georgia, Mississippi, Tennessee and the Carolinas, according to the Department of Commerce's field office in Atlanta. Farmers in those states realized an estimated $2,926,928,000 in cash income from their products as compared with $3,232,612,000 realized during the same period last year.

However, Florida was among six states in the nation showing an increase in total income this year over last. In that state, recipts went from $435,995,000 to $445,663,000, a rise of 2.2%.

Pastures, Cover Crops Show Good Growth in Mid-South

MEMPHIS, TENN.—Cover crops and winter pastures are showing excellent growth as a result of good rains over most of Arkansas, Mississippi and Tennessee.

Extension officials in the three states reported the rains have brought an improvement in farm conditions and in the outlook of the farmers.

Arkansas farmers have begun to break land in winter plowing, the Arkansas Extension Service said. There were no estimates on how many acres might have been turned over, but a spokesman pointed out that the comparatively dry winter has given farmers opportunity to break ground.

Some farmers have plowed their field to loosen the sod so that future rains will soak into the soil. Breaking soil now involves some risk, because the soil might wash if there are heavy rains. Farmers in Arkansas still need rain to build up streams and underground reserves for this year's plantings.

In West Tennessee, farmers found winter cover crops and pastures improving and milk production increasing in some areas.

In Mississippi, extension officials said ample moisture and warm weather resulted in increased growth of winter pastures.

"There was increased production from dairy cows and general feeling of optimism among pasture farmers," specialists of the Mississippi Agricultural Extension Service said.

Arlis Anderson, associate dairyman, reported that milk production, where green grazing is available, is on the upswing. Pasture specialist W. R. Thompson says, "Oats, wheat and other winter grazing crops are really growing."

Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The rotational circulation of this issue is concentrated in the Western states.

Advance of 'Farmaceuticals'

Successful use of antibiotics in the control of a number of difficult plant diseases is making headlines these days. This fact is also a tribute to research efforts of the chemical industry which has spent many years seeking materials for this type of work.

Control of fire blight of apple trees, achieved at a lower cost than was thought possible earlier, is one example of significance. Other diseases reported to be controlled by antibiotics include fire blight of pears, walnut blight, wildfire of tobacco and bacterial spot of tomatoes.

Recent reports of tests made during 1954 and previous years have been seen lately, telling of remarkable results. One such paper presented at a midwestern meeting, indicated that the amount of one material, Agri-mycin, could be reduced in concentration by 50 to 75% under the lowest levels previously recommended, without impairing its effectiveness. In addition, it was noted that only three to four applications were needed for adequate control. Such reductions in amounts needed for effectiveness will go a long way in making use of these new products both feasible and economical.

Another antibiotic product, Streptomycin, has been reported effective in controlling plant diseases previously difficult to halt. This material, to be marketed under the trade name of Agristrep, can be applied either as a dust or a spray, according to the report. It is absorbed into the leaves and stems, thus offering protection against harmful organisms. Of significance also, is the fact that no antibiotic residue is found in the matured crop.

It is encouraging to note these recent developments in the face of remarks we've all heard from time to time, that "we've just about reached the end of the road so far as developing new insecticides and plant disease control materials are concerned..."

Advances such as those with antibiotics should make those afflicted with "status-quo-itis" change their viewpoints a bit. The end of the road is certainly not in sight, nor do we expect it to be for a long time.

Where do we go from here? Who knows. But so long as there are forward-looking firms with teams of research men at work, the field of "farmaceuticals" will not run dry.

It's somewhat as observed by Dr. Jasper H. Kane, vice president of Chas. Pfizer & Co. in a recent radio address. He pointed out that "The development of atomic energy reminds all of us that, as we learn to control the discoveries of science, we can revolutionize our civilization just as radically as it was changed by the development of machines in the 19th century.

"In the field of pharmaceuticals, use of atomic by-products for research and therapy has only begun. With atomic trace elements as tools, science can expect to open up huge new areas of knowledge.

"I do not see how we can be pessimistic in the face of current achievements. As long as the chemical industry continues to pour out its profits for new research there will continue to be new opportunities for our citizens.

"Fifteen years ago no druggist could supply three quarters of the life-saving agents he now dispenses. They simply weren't in existence. The lesson for our entire industry is plain. We don't know what the new developments will be, but we can be certain that they will come, and that with them will come new opportunities for full employment and the economic progress we have come to expect as our American right."

VIEWPOINT:

Education Need at Dealer Level

By C. M. FERGUSON

Administrator, Federal Extension Service, USDA

Whether each dealer has many or just a few farm customers, he is a source of information for farmers as well as a source of supplies and equipment. In view of the increasing complexity of agriculture the need for more education on the dealer level is evident.

At present, more than half of the State Agricultural Extension Services hold conferences, training schools, or field meetings for dealers regarding the various chemicals used on farms. There is almost day-to-day contact, too, by extension workers with the agricultural chemical industry. These contacts may be by technical specialists at the State college or by the extension agents in the many counties.

A good deal of work is also being carried on with the grain trade and milling interests on grain sanitation. Similar work is being carried on with other commodity groups.

In general, dealers who handle bulk supplies of agricultural chemicals are of necessity more aware of the importance of keeping up to date on scientific advances than are the smaller dealers. They are also more aware of the need for understanding local situations if they are to give realistic buymanship guidance to farm people.

This is not in any sense intended to be critical of the small dealers. They are confronted with a wider variety of problems, running from the demands of the grower with a few acres to those of the backyard gardener. We firmly believe that the small dealer is equally competent and can render effective assistance if he has the information and the educational help that he needs. This is a challenge to both the industry and the extension worker to more fully meet the needs of the small dealer in these areas.

Reducing production costs is a pressing problem to the farmer, as it is to industry. County agents are constantly stepping up their efforts to bring scientific information to farm people that is fitted to local situations. Here are some examples of their work in helping to guide farm people in the application of agricultural chemicals.

County agents point out the advantages and methods of labor-saving operations such as the use of chemicals in thinning fruit trees.

Extension is stressing to commercial vegetable growers the use of new and better varieties, chemical weed control, increased and more efficient use of fertilizers, and insect and disease control.

These examples are not unique by any means. We could mention many more. But we think they serve to emphasize how important it is for dealers to know of the latest recommendations county agents are making to farmers.

The basic job of the Cooperative Extension Service of the State land-grant colleges and the United States Department of Agriculture is, and always has been, to speed up the application of agricultural and home economics research. We strongly feel that dealers will play an increasingly important role in helping in the dissemination of scientific information to farm people. The opportunities of dealers for further service to farm people are virtually unlimited.

CROPLIFE is a controlled circulation journal mailed to those responsible for the production and distribution of fertilizer and other farm chemicals and to retail dealers of the agricultural chemical industry in the U.S. To those not on the controlled list, CROPLIFE is available at $5 for one year, $9 for two years ($8 a year outside the U.S. and possessions). Single copy price, 25¢.

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MEETING MEMOS

Jan. 18—Georgia Plant Food Educational Society, Third Annual Meeting, University of Georgia, Athens.

Jan. 18—Iowa Fertilizer Dealers' Short Course, Iowa State College, Ames, Iowa.

Jan. 19-21—Pacific Northwest Agricultural Chemical Industry Conference, Benson Hotel, Portland, Ore., sponsored by the Western Agricultural Chemical Assn.

Jan. 19-21 — Northwest Cooperative Spray Project, Imperial Hotel, Portland, Ore. (Open meetings Jan. 21 at Benson Hotel in connection with Pacific Northwest Agricultural Chemical Industry Conference.)

Jan. 20-21—Illinois Custom Spray Operators School, Illini Union, Urbana, Ill.

Jan. 24-25 — Aircraft and Ground Spraying Short Course, Institute of Agriculture, University of Minnesota, St. Paul.

Jan. 24-26—Pennsylvania Lime and Fertilizer Salesmen's School, Pennsylvania State University, State College, Pa.

Jan. 26—Northern California Nurserymen's Institute, University of California College of Agriculture, Davis, Cal.

Jan. 26-27—Eighth Annual California Weed Conference, Carbillo Hotel, Santa Barbara, Calif.

Jan. 28 — Colorado Agricultural Chemicals Assn., Annual Meeting, Cosmopolitan Hotel, Denver, W. D. Smith, P.O. Box 5510, Denver 17, President.

Jan. 31-Feb. 1 — National Cotton Council, 17th Annual Meeting, Shamrock Hotel, Houston, Texas.

Feb. 7-9 — Association of Southern Agricultural Workers, 52nd annual meeting, Louisville; B. B. Jones, P. O. Box 1460, New Orleans, secretary-treasurer.

Feb. 8-11 — Fertilizer-Seed Dealer Meetings, University of Tennessee: Feb. 8, Andrew Jackson Hotel, Nashville; Feb. 9, City Hall, Jackson; Feb. 11, McCord Hall, University of Tennessee Farm, Knoxville.

Feb. 10-11 — Third Annual Oregon Fertilizer Conference, Oregon State College, Corvallis, Ore.

Feb. 10-11—Crop and Soil Conference, Oklahoma A. & M., Stillwater, Okla.

Feb. 11—New York Section, American Chemical Society, Symposium of Agricultural Chemical Development, Carbide and Carbon Bldg., New York.

Feb. 14-16 — Centennial Symposium, Nutrition of Plants, Animals, Man, Michigan State College, East Lansing, Mich.

Feb. 17-18—Middle West Soil Improvement Committee, Annual Meeting with Agronomists, Palmer House, Chicago, Z. H. Beers, 121 W. Wacker Drive, Chicago 1, Ill., Executive Secretary.

Feb. 23-25—Tenth Annual Meeting of Midwestern Chapter, National Shade Tree Conference, Chase Hotel, St. Louis, N. B. Wysong, Cook County Forest Preserve, 536 N. Harlem Ave., River Forest, Ill., secretary-treasurer.

Feb. 23-25 — Fourth Annual Ohio-Indiana Agricultural Aviation Conference, Union Bldg., Purdue University, Lafayette, Ind.

Feb. 28-March 1—Fertilizer Section, Southern Safety Conference, Jung Hotel, New Orleans, Curtis A. Cox, Virginia-Carolina Chemical Co., Richmond, Va., Chairman.

March 7-9 — National Agricultural Chemicals Assn., Spring Meeting, Chase and Park Plaza hotels, St. Louis. Lea S. Hitchner, Barr Bldg., Washington 6, D.C., Executive Secretary.

March 8-9—Western Cotton Production Conference, Hotel Westward Ho, Phoenix, Ariz.; National Cotton Council, P.O. Box 18, Memphis 1, Tenn.

March 22-24—National Farm Chemurgic Council, Inc., Annual Conference, Deshler-Hilton Hotel, Columbus, Ohio; John W. Ticknor, NFCC, 350 Fifth Ave., New York, conference chairman.

March 24-25—North Central States Branch, Entomological Society of America, East Lansing, Mich.

May 19—Fertilizer Section, 25th Annual North Carolina Safety Conference, Robert E. Lee Hotel, Winston Salem, N.C; William C. Creel, Safety Director, Department of Labor, State of North Carolina, Raleigh, Chairman.

June 3—Fertilizer Section, Virginia State Safety Association, Jefferson Hotel, Richmond, Va; William C. Richardson Southern States Cooperative, Richmond, Chairman.

June 28-30 — Sixth Annual Pacific Northwest Plant Food Assn. Regional Fertilizer Conference, Boise Hotel, Boise, Idaho, Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., secretary.

Aug. 15-19 — American Society of Agronomy and Soil Science Society of America, University of California, Davis Campus.

Sept. 7-9 — Ninth Annual Beltwide Cotton Mechanization Conference, Texas A&M College, National Cotton Council of America, Box 18. Memphis 1, Tenn.

Oct. 17-18—Fertilizer Section, National Safety Congress, LaSalle Hotel, Chicago, Thomas J. Clarke, Chairman.

Nov. 2-3 — Annual Convention, Pacific Northwest Plant Food Assn., Pilot Butte Inn, Bend Ore., Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., Secretary.

Dec. 5-7—Agricultural Ammonia Institute, Kansas City; Jack F. Criswell, Executive Vice President, Claridge Hotel, Memphis, Tenn.

Nurserymen to Hear Talks on Fertilizer

DAVIS, CAL.—Fertilization will be a major topic discussed at the annual Northern California Nurserymen's Institute held on the agricultural campus of the University of California Jan. 26.

Albert O. Paulus, extension plant pathologist at the University's Citrus Experiment Station in Riverside will also discuss the subject "What Is Air Pollution?" at the one-day meeting for all Northern California nurserymen and their employees. Two rotating panels are scheduled for nurserymen to discuss their problems with experts. The panels will cover soils, fertilization, water and air pollution.

KANSAS STATE APPOINTMENTS

MANHATTAN, KANSAS — The appointment of William Flocker and Val W. Woodward to the staff of the Kansas State College Agronomy Department has been announced by Dr. R. V. Olson, head of the department.

Cotton Council Meeting Scheduled

MEMPHIS — Ezra Taft Benson, secretary of agriculture, will be the principal speaker at the 17th annual meeting of the National Cotton Council at the Shamrock Hotel in Houston, Jan. 31-Feb. 1.

Also appearing will be Charles B. Shuman, Sullivan, Ill., recently elected president of the American Farm Bureau Federation. A. L. Durand, Hobart, Okla., president of the National Cotton Council, is scheduled to address the industry leaders on the opening day.

JOIN MCA

WASHINGTON—The Atlantic Refining Company, Inc. of Philadelphia and the Archer-Daniels-Midland Co. of Minneapolis have joined the Manufacturing Chemists' Assn. The MCA represents over 90% of the productive capacity of the chemical industry.

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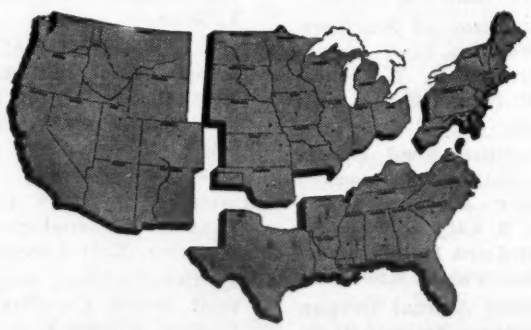

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